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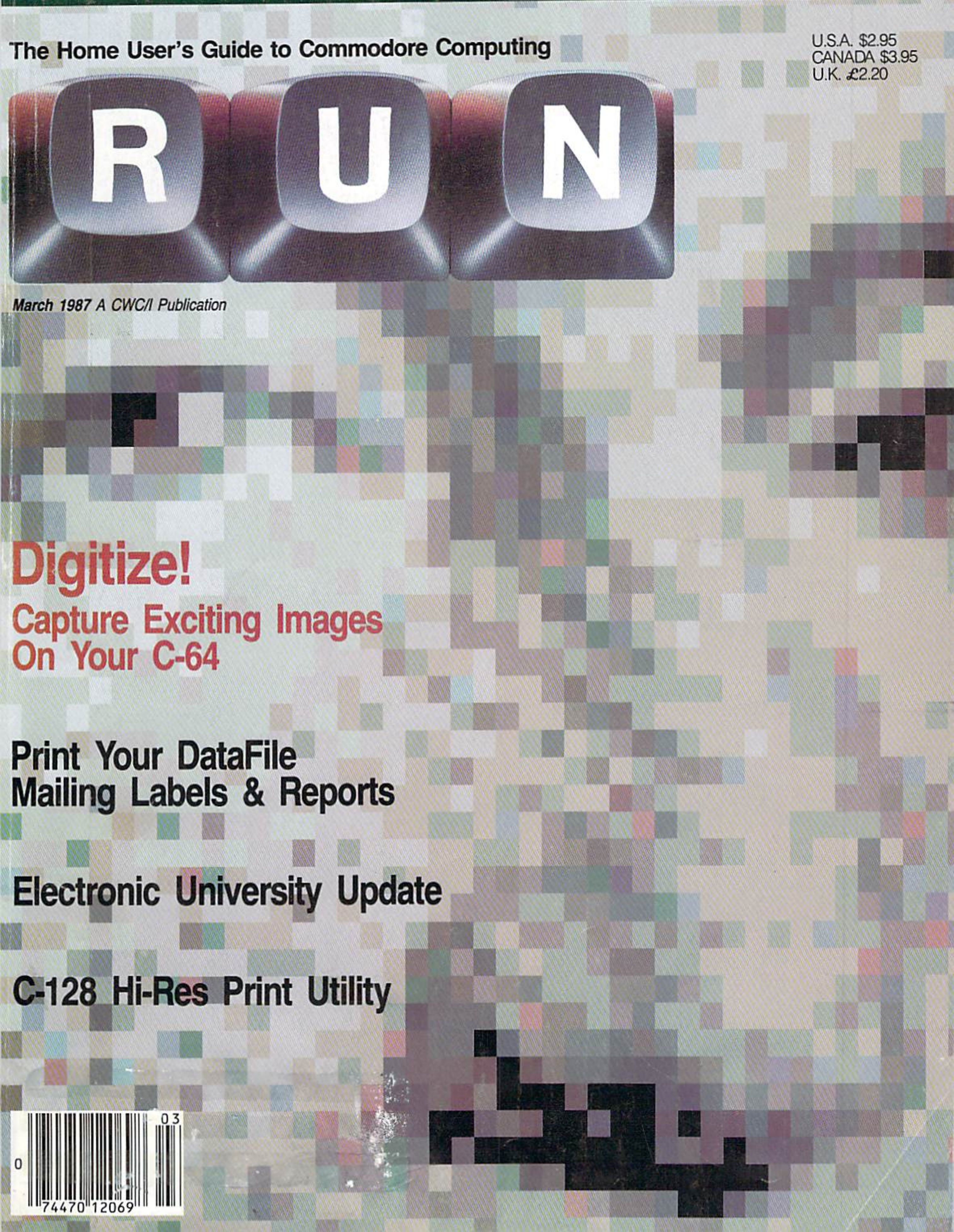
RUN

March 1987 A CWC/I Publication



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version 2.0 by Marty Franz & Joe Peter

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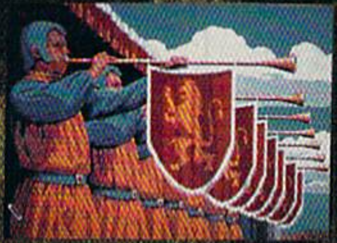

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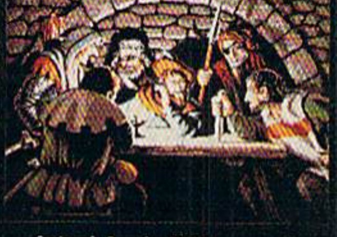

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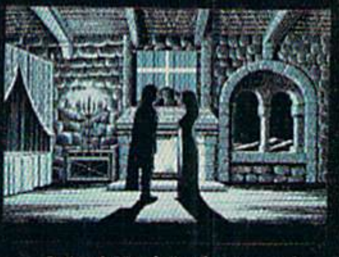

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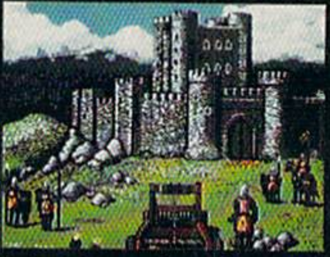

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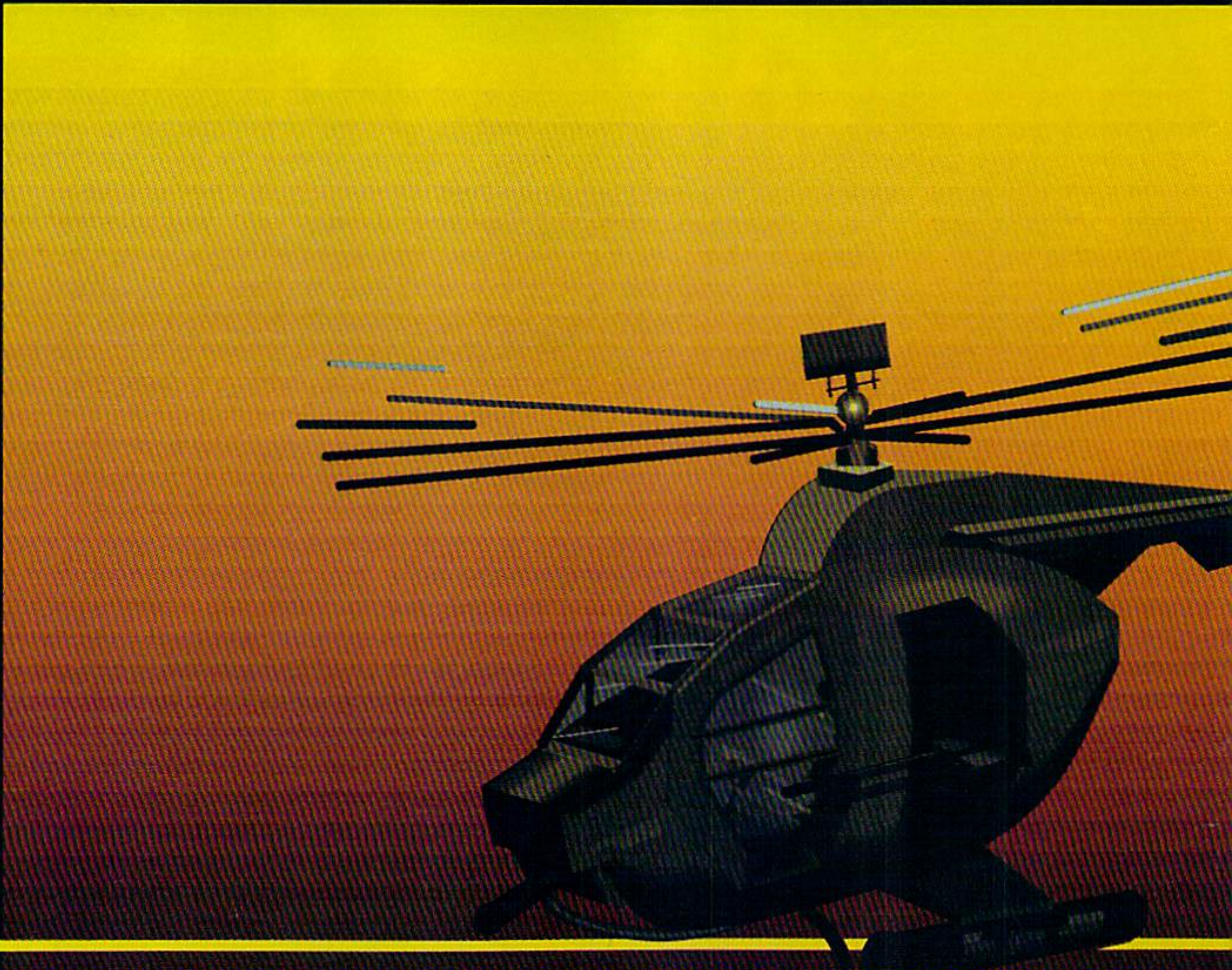

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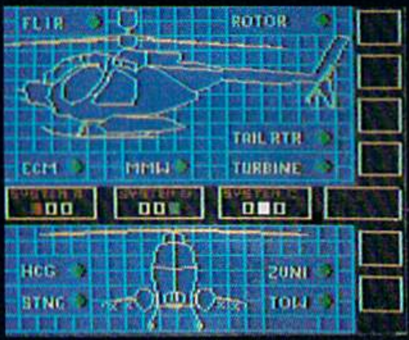

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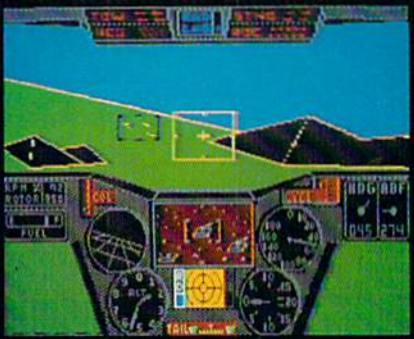

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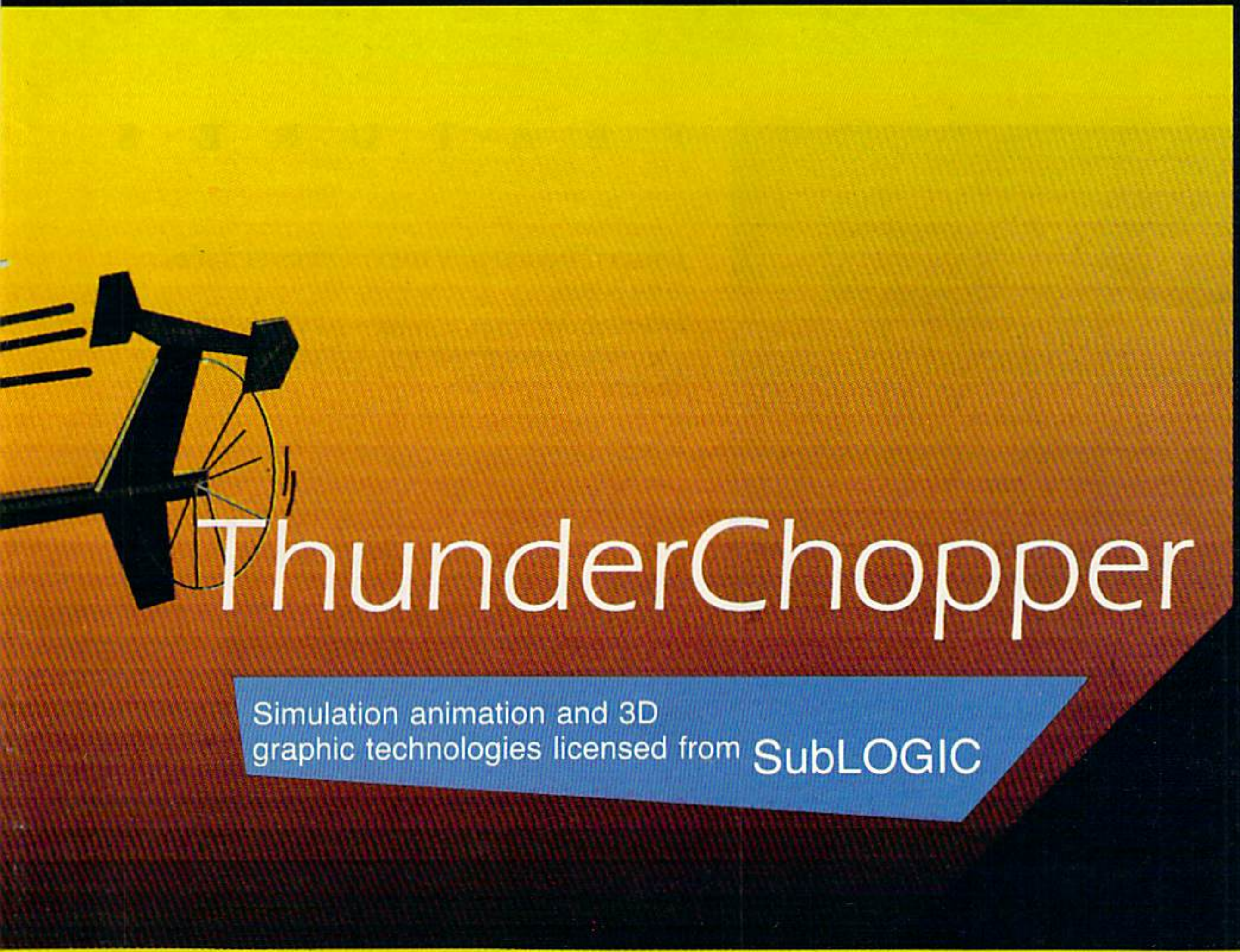
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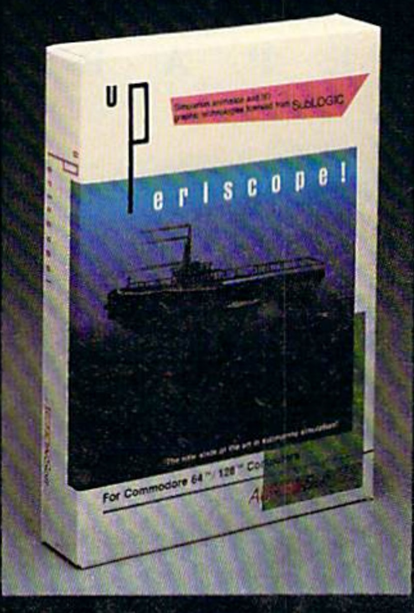
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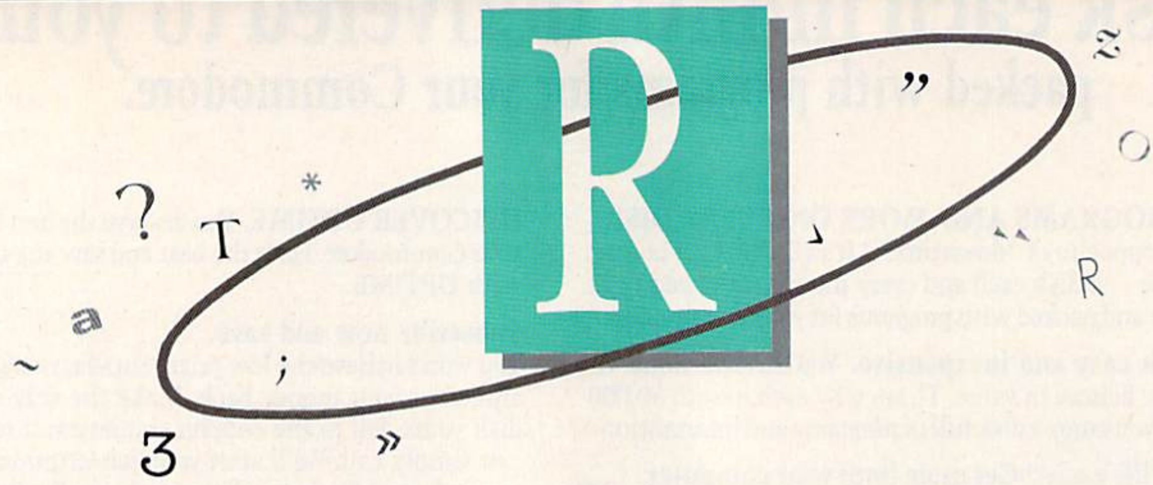

CES Highlights

The year's CES show in Las Vegas lived up to its billing as the most important event in the home computing industry. Unlike recent shows, which were victims of a sagging interest in the home computer market, this year's interest level was at its peak with the cornucopia of computer products presented. There was something for everyone—hardware, software, peripherals and applications.

Commodore, infected with the PC clone fever, seems poised to garner its share of that crowded market with the introduction of two PC-compatible machines, the PC10-1 and PC10-2.

Built-in features on these machines include a disk drive (one on the PC10-1 and two on the PC10-2), MS-DOS, power supply, serial and parallel ports, monochrome or color capability and a configuration to accommodate a hard disk.

Both these 8088-based models feature a detachable keyboard, and the layout of the keys is similar to that of the IBM PC, with ten function keys and a numeric keypad. The PC-10s also feature five expansion slots.

The PC10-1, which contains 512K RAM (expandable to 640K), will sell for $999. The double-disk version, with 640K, will sell for $1199. The PC-10s will be sold primarily through computer dealers, according to Commodore officials.

Commodore also introduced another computer model—the 128-D, which is simply a C-128 with a detachable keyboard and built-in disk drive and power supply. One Commodore official noted that this "convenience item" allows users to operate with the keyboard on their laps or on their desks.

The computer console, where the power supply and disk drive are housed, also serves as a monitor stand. This affords the user a smaller *footprint*, a computer buzzword bandied about at this year's show. For the space-conscious computerist, this simply means that the 128-D (as well as the PC machines) will take up less room on your desk.

The unit sells for about the same price as the C-128 computer and disk drive sold separately ($599).

Both the 128-D and PC-compatibles have been marketed successfully in Europe and are making their first entry in the U.S.

For the 64/128 line, Commodore introduced several new peripherals to meet the needs both of new customers and existing Commodore computerists:

—the plug-in 1764 RAM expansion module, which gives 64 owners an additional 256K of memory and greatly decreases program loading and saving time. Price is $129.

—the 1581 disk drive, which accommodates 3½-inch disks and, with a capacity of 808K and a faster data transfer rate, is primarily intended as a mass-storage device. Cost is $399.

—the 1351 two-button mouse at a cost of $49.

Other themes at the CES show included:

—low-cost software. Good news for the software purchaser on a budget—software prices are coming down! For example, Mindscape has recently created a software division to market a line of inexpensive programs. The division, entitled Thunder Mountain, features inexpensive 64 programs. Another software company, Constellation Software, demonstrated its line of low-priced products at the show. Both of these companies primarily feature software that was originally marketed in Europe.

—education. Several interesting products demonstrated at the show included Software for Children, from Hearsay, Inc, and Talking Teacher, from Firebird. Both products are learning tools aimed at making learning fun for youngsters through voice interaction with the computer.

—GEOS. Berkeley Softworks demonstrated its series of GEOS applications, including geoCalc (spreadsheet), geoFile (database), Writer's Workshop (writing environment) and geoDex (a Rolodex-type accessory). According to president Brian Dougherty, Berkeley will soon be marketing a C-128 version of GEOS, which will feature 80-column screen capability. Also, Commodore's 1764 RAM expander will feature a GEOS RAM disk, which will allow you to make use of the GEOS applications.

This is just a random sampling of some of the products featured at this year's CES. (RUNwill feature in-depth reviews of these and other products in subsequent issues.)

This year's show generated more excitement and enthusiasm for the Commodore home computing market than I've witnessed in some time. The smart money here in Las Vegas says the home computer market is back and as strong as ever. Any takers?

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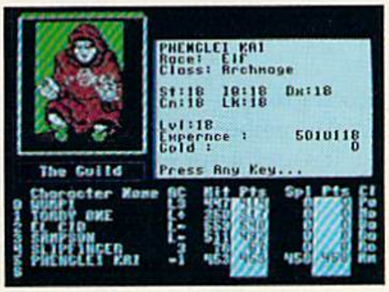


```
PHENGLEI KAI
Race: Elf
Class: Archmage

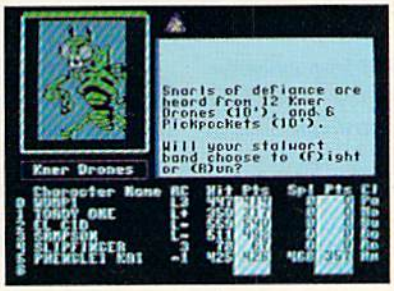
St:18  IQ:18  Dx:18
Cn:18  LK:18

Lvl:18
Expernce :      5010118
Gold :                0

Press Any Key...
```

The Guild
Character Name AC Hit Pts Spl Pts Cl
WUMPI
TONDY ONE
EL CID
SAMPSON
SLIPFINGER
PHENGLEI KAI

You get a new class of magic user – the Archmage. With 8 powerful spells like Heal All, Fanskar's Night Lance, and the awesome Mangar's Mallot.

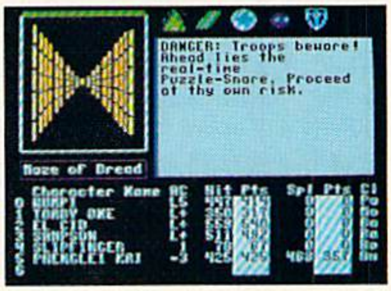


```
Snarls of defiance are
heard from 12 Kner
Drones (10'), and 6
Pickpockets (10').

Will your stalwart
band choose to (F)ight
or (R)un?
```

Kner Drones
Character Name AC Hit Pts Spl Pts Cl
WUMPI
TONDY ONE
EL CID
SAMPSON
SLIPFINGER
PHENGLEI KAI

There are over 100 monsters, like this Kner Drone. Many animated. All dangerous.



```
DANGER: Troops beware!
Ahead lies the
real-time
Puzzle-Snare. Proceed
at thy own risk.
```

Maze of Dread
Character Name AC Hit Pts Spl Pts Cl
WUMPI
TONDY ONE
EL CID
SAMPSON
SLIPFINGER
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Circle 3 on Reader Service card.

MAGIC

Discover an undocumented C-128 keyword; speed up Datafile sorts and improve its Find option; restore programs accidentally erased; convert 40-column, hi-res pictures to Ultra Hi-Res format, and more.

By JIM BORDEN

Magic is the original *column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for* RUN*'s imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:*

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RUN *will pay $10 to $50 for each trick accepted for publication in the column. If your submission is selected for the Trick of the Month,* RUN *will award $50 and a Magic Contributor T-shirt. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and the C-128. Tricks for the C-128 only are not eligible.*

$3B0 C-64 SYS a Border—Creating screen borders with the Print command can be quite a chore. Here's a machine language alternative. This routine can be appended to your program to create borders with your own character and color. The ML program that SYS a Border creates is relocatable and may be loaded wherever you have 100 bytes of free memory. Please note that locations 251 through 254 are used during the execution of the ML program.

The syntax for using SYS a Border is SYS address, screen code #, color code #. The demo at the end of the Basic loader shows how to create a border with the asterisk in the current cursor color.

```
1 REM 64 SYS A BORDER-FRANK COLARICCI
2 REM RELOCATABLE-JUST CHANGE 'BR'
3 BR=49152:REM SYS ADDRESS
4 FOR X=BR TO BR+99:READ A:POKE X,A
5 T=T+A:NEXT:IFT<>14085 THEN{2 SPACEs}STOP
6 DATA 032,253,174,032,158,173,032,247
7 DATA 183,140,000,004,032,253,174,032
8 DATA 158,173,032,247,183,140,000,216
9 DATA 162,039,173,000,004,157,000,004
10 DATA 157,192,007,173,000,216,157,000
11 DATA 216,157,192,219,202,016,235,169
12 DATA 039,133,251,133,253,169,004,133
13 DATA 252,169,216,133,254,162,024,173
14 DATA 000,004,160,000,145,251,200,145
15 DATA 251,173,000,216,145,253,136,145
16 DATA 253,165,251,024,105,040,144,004
17 DATA 230,252,230,254,133,251,133,253
18 DATA 202,208,220,096
100 PRINT"{SHFT CLR}{3 CRSR DNs}SAMPLE"
110 SYS BR,42,PEEK(646)
```

Frank Colaricci
Winter Park, FL

$3B1 DFMail record groups—Adding the following lines to DFMail (*RUN*, December 1984) will print selected parts of a mailing list. It's useful, for example, for addressing a mailing to club members who have not paid their dues. First, sort on a field containing dues payment information, then view to see the first and last record numbers of those who have not paid. You can then print labels for just the delinquent members.

```
1047 PRINT"{CRSR DN}{4 SPACEs}{CTRL 9}C{CTR
     L 0}ONSECUTIVE GROUP OF RECORDS"
1059 IFC$="C"GOTO1326
1326 INPUT"BEGIN WITH WHICH RECORD (0 TO EX
     IT)";FS:IFFS=0GOTO1040
1328 IFFS>XTHENPRINT"NO SUCH RECORD":GOTO13
     26
1330 INPUT"END WITH WHICH RECORD (0 TO EXIT
     )";LS:IFLS=0GOTO1040
1332 IFLS<FSTHENPRINT"TRY AGAIN!":GOTO1326
1334 FORI=FSTOLS:GOSUB1268:NEXT:GOTO1040
```

Stanley L. Anderson
Tishomingo, OK

$3B2 Checking monitor resolution—The next time you shop for an 80-column monitor, test its resolution right in the store with this short program:

```
10 PRINT CHR$(14):FOR A = 1TO40*23:PRINT",V";:NEXT
```

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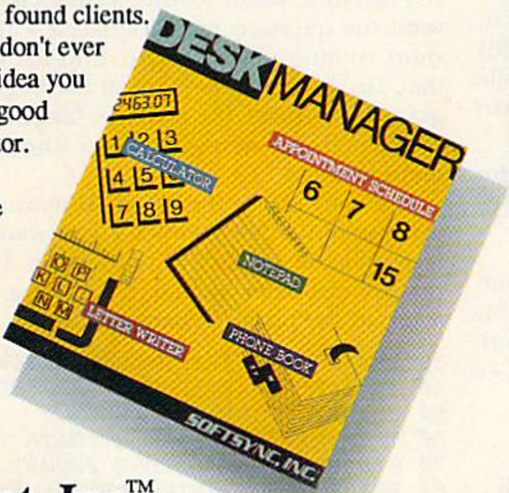

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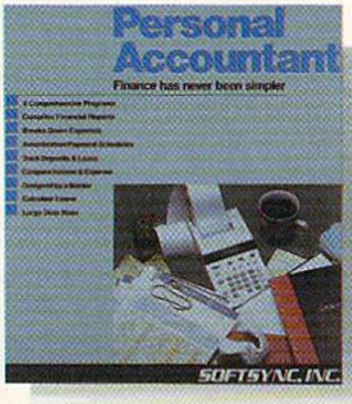

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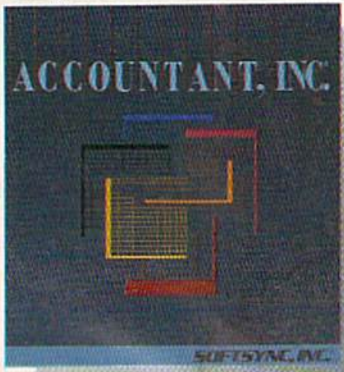

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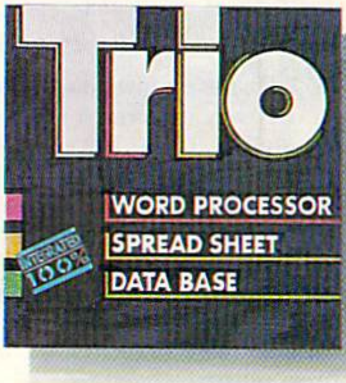

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Enter the program and run it. The screen will fill with 23 lines of commas and lowercase v's. To check the resolution, look at the single pixel that forms the point of the center of the v or the tail of the comma. On a monochrome monitor the pixels should be a single round point of light. On a color monitor only one color should predominate, with only slight spilling of the primary colors (red, green and blue) at the edges of the display area. You might want to try different color combinations for the screen and text, too.

Since only one "gun" is used to produce the monochrome picture, the image is sharper and clearer than the color image. Remember that adjusting the brightness, contrast, color and tint also affects picture quality.

Paul L. Hubbard
Baltimore, MD

$3B3 C-64 disk verify tip—After saving a program to disk, I always verify it with VERIFY "*",8 to save time. This works on the C-64 and VIC because * accesses the last file saved or loaded. (The exception is when you initially turn on the drive; it refers only to the first file on the disk.)

Hal Vaughn
Mount Airy, NC

$3B4 C-128 input control—In the September 1986 issue of *RUN*, trick $32F for the C-64 put an "invisible" quotation mark in an Input statement so that you could enter commas and colons when inputting data. My program does the same thing on the C-128 in 128 mode.

```
10 REM C-128 INPUT CONTROL-SUE HOFFMAN
20 PRINT"[PROMPT HERE]";:TC=RCLR(5):SW=PEEK
   (215):IFSW<>0THENSW=6
30 COLOR5,RCLR(SW):PRINT"{2 CRSR RTs}"CHR$(
   34)CHR$(27)"O{3 CRSR LFs}";
40 COLOR5,TC:POKE208,1:POKE842,29:INPUTA$
50 PRINT"A$="A$:IFA$<>"END"GOTO20
```

Sue Hoffman
Hudson, WI

$3B5 Base conversions—Did you ever wish there was an easy way to convert a number from one number base to another? The C-128's Monitor mode makes conversion easy! Just type MONITOR and press return (or use the F8 key) to put you into the built-in monitor. To change a number from one base to another, type +, $, & or % and the number. You'll be given the decimal (+), hexadecimal ($), octal (&) and binary (%) equivalents. Just precede the number with the appropriate symbol, and you can convert from any base to the others. To return to Basic, type X and press return.

Kenneth H. Hottes
Danbury, CT

$3B6 Irish Jig 128—Ah, the luck of the Irish! Bring out the "wee bit o' Irish" in your C-128 with this popular Irish jig.

```
10 REM AN IRISH JIG-JESSE BROWN
20 ENVELOPE 0,2,0,15,5,2,200:TEMPO 19
30 PLAY "V1O4T0U15X0":PLAY"V2O3T5U15X0":PLA
   Y"V3O3T6U15X0"
40 A$="V1O4WRV2O3.HG V3O3.HCM V1O4WR V2O3.H
   G V3O3.HCM V2O3.HC V3O3.HG V1O5QEICQEICM
    V2O3.HC V3O3.HG V1O5QEICIGIFIEM V2O3.HC
    V3O3.HG V1O5QFIDQFIDM"
50 B$="V2O3.HC V3O3.HG V1O5QFIDIFIEIDM V2O3
   .HC V3O3.HG V1O5QEICQEICM V2O3.HC V3O3.H
   G V1O5QEICIGIFIEM V2O3QD V1O5IFIEIF V2O3
   IRQG V1O5QD V2O3IR V1O5IGM"
60 BB$="V2O3QC V1O5IEICIC V2O3IR V1O5QC V2O
   3QC V1O5IR V2O3IRM"
70 PLAY A$:PLAY B$:PLAY BB$+A$:PLAY B$+BB$
```

Jesse B. Brown
Eunice, LA

$3B7 C-64 input prompt—Sometimes the standard input prompt can get in the way of elegant programming. For instance, when writing a financial program, you may want the question mark replaced with a dollar sign. My short routine rewrites Basic into RAM to let you do just that. Insert the data loader at the beginning of your program and activate the machine language routine with SYS 49152. A dollar sign will appear whenever the Input statement is called.

You can restore the question mark at any time, or you can use any other character you want. Just poke the selected character code into location 43846. If you prefer that no character appear, try using a 32 (the space character) as the prompt character.

```
30 REM DOLLAR INPUT-KENT BRIDWELL
40 CK=0:FORI=49152 TO 49223:READ A
50 CK=CK+A:POKE I,A:NEXT
60 IFCK<>11068THENPRINT"DATA ERROR!":END
70 SYS49152:REM >>TEST PROMPT NOW
80 PRINT:INPUT"ENTER PRICE: ";D
90 PRINT:PRINT"PRICE IS $"D
100 DATA 169,000,133,251,133,253,169,160
110 DATA 133,252,133,254,169,255,141,072
120 DATA 192,169,191,141,073,192,160,000
130 DATA 177,251,145,253,230,251,208,002
140 DATA 230,252,165,251,205,072,192,208
150 DATA 010,165,252,205,073,192,208,003
160 DATA 076,060,192,230,253,208,002,230
170 DATA 254,076,022,192,169,036,141,070
180 DATA 171,165,001,041,254,133,001,096
```

Kent M. Bridwell
Santa Monica, CA

$3B8 C-64 & C-128 fraction action—Magic trick $340 (*RUN*, October 1986) converts decimal fractions to common fractions, but it is quite slow. My program works faster, reducing the fractions much as you or I would.

```
10 REM COMMON FRACTIONS-SISTER ANNE STREMLA
   U
20 INPUT "{CRSR DN}GIVE ME A DECIMAL NUMBER
   ";N$
30 FORX=1TO LEN(N$)
40 IF MID$(N$,X,1)="."THEN FLAG=1:D=X
50 NEXT:IF VAL(N$)=0THEN END
60 IF FLAG <>1 THEN PRINTN$:GOTO20
70 L$=LEFT$(N$,D-1):R$=RIGHT$(N$,LEN(N$)-D)
```

Continued on p. 76.

EASY-TO-USE SUBROUTINES AND UTILITIES

Mega-Magic, an extension of the RUN *Magic column, offers each month an interesting and useful subroutine or utility program. Although noticeably longer than those in the Magic column, these listings are still short enough to type in easily and quickly.*

File Lock—Unintentionally scratching an irreplaceable file can drive you mad. File Lock for the C-64 and C-128 (in 40-column mode) will prevent you from scratching such files in the future by locking them on the disk and later unlocking them as you need. File Lock will lock program, sequential, user and relative files. However, it won't load locked files on the 1571 disk drive in 1571 mode.

Type in File Lock using either 64 or 128 Perfect Typist, because an incorrect line could scramble the disk. Also, *don't* abbreviate PRINT. When you're done, save the program before you run it.

Try File Lock first on a practice disk, just in case you did make a typing error. To use File Lock, load it and then replace the disk it's on with the disk containing the programs you intend to lock.

When you run the program, the screen will display a short menu, beneath which will appear a window displaying the name of the first file on your disk. If you wish to lock it, press F5.

Using the F1 key, move through the directory one filename at a time. Each time you reach a file you want to lock, press F5. To unlock a file, press F6 when its name appears in the window.

After you've gone through the whole directory, list it again. You'll find that the listing for each locked file includes a less-than symbol (<) to the right of the file type—PRG<, for example. When you're finished locking and unlocking files, press F7 to quit.

File Lock will also display the track (always 18) and the sector numbers (1–18) that the directory of filenames is stored on. Once you get used to which files are where on a disk, you'll be able to reach specific files quickly by using the F3 key to move to the right sector and then the F1 key to move to the file in that sector that you want. Ⓡ

Michael Myers
Beardstown, IL

Listing 1. *File Lock program.*

```
10 REM 64/128 (40 COLUMN) FILE L
   OCK-MICHAEL MYERS        :REM*218
20 OPEN15,8,15:OPEN2,8,2,"#":S=1
   :POKE53281,12:IFFRE(0)=FRE(1)
   THEN50                   :REM*182
30 R=133:FORP=1TO7STEP2:KEYP,CHR
   $(R):KEYP+1,CHR$(R+4):R=R+1:N
   EXT                      :REM*252
40 IFPEEK(215) THENPRINT"40 COLU
   MN MODE ONLY!!":CLOSE15:END
                            :REM*132
50 PRINT"{CTRL 1}{SHFT CLR}{2 CR
   SR DNs}{CTRL N}{SHFT F}{SHFT
   I}{SHFT L}{SHFT E} {SHFT L}{S
   HFT O}{SHFT C}{SHFT K}{3 CRSR
    DNs}"                    :REM*22
60 PRINT"F1{2 SPACEs}={2 SPACEs}
   {SHFT N}EXT {SHFT F}ILE"
                             :REM*38
70 PRINT"F3{2 SPACEs}={2 SPACEs}
   {SHFT N}EXT {SHFT S}ECTOR"
                            :REM*110
80 PRINT"F5{2 SPACEs}={2 SPACEs}
   {CTRL 9}{SHFT L}OCK{CTRL 0} {
   SHFT F}ILE!"             :REM*162
90 PRINT"F6{2 SPACEs}={2 SPACEs}
   {CTRL 9}{SHFT U}NLOCK{CTRL 0}
    {SHFT F}ILE!"            :REM*94
100 PRINT"F7{2 SPACEs}={2 SPACEs
    }{SHFT Q}UIT":GOSUB350:GOTO1
    20                       :REM*22
110 RESTORE:S=S1:IFS>18ORS<1THEN
    S=1                      :REM*42
120 PRINT"{HOME}{3 CRSR DNs}{SHF
    T T}RACK: 18 {SHFT S}ECTOR:"
    S"{CRSR LF} "            :REM*54
130 PRINT#15,"U1";2;0;18;S:PRINT
    #15,"B-P";2;0:GET#2,T$,S$:S1
    =ASC(S$+CHR$(0))        :REM*182
140 PRINT#15,"U1";2;0;18;S
                            :REM*148
150 READP:IFP=0THEN110      :REM*140
160 PRINT#15,"B-P";2;P      :REM*224
```

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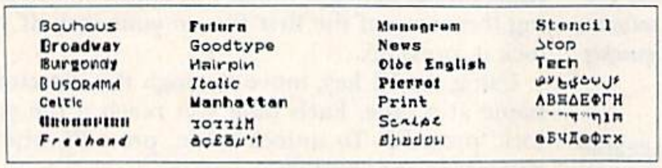
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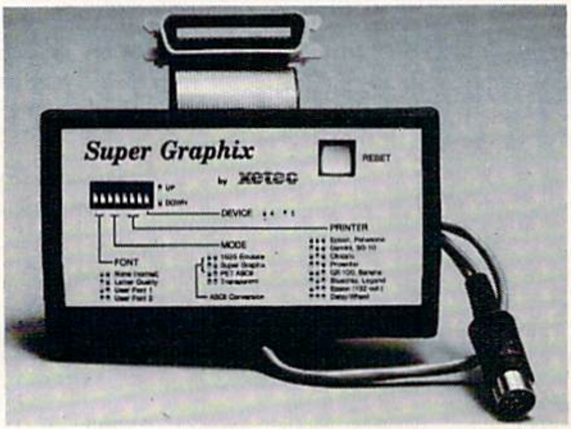

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Listing 1 continued.

```
170 FORI=1TO32:POKE1544+I,32:NEX
    T                        :REM*208
180 FORI=1TO32:GET#2,A$:POKE1544
    +I,ASC(A$+CHR$(0)):NEXT
                             :REM*126
190 GETQ$:IFQ$=""THEN190 :REM*12
200 IFQ$="{FUNCT 1}"THEN150
                              :REM*70
210 IFQ$="{FUNCT 3}"THEN110
                             :REM*178
220 IFQ$="{FUNCT 5}"THENQ=1:GOTO
    260                       :REM*52
230 IFQ$="{FUNCT 6}"THENQ=2:GOTO
    260                       :REM*80
240 IFQ$="{FUNCT 7}"THEN340
                             :REM*240
250 GOTO190                   :REM*68
260 PRINT#15,"B-P";2;P    :REM*69
270 GET#2,A$:IFA$=""THENA$=CHR$(
    0)                       :REM*101
280 IFQ=1THENA=ASC(A$)OR64
                             :REM*123
290 IFQ=2THENA=ASC(A$)AND191
                              :REM*73
300 PRINT#15,"B-P";2;P  :REM*109
310 PRINT#2,CHR$(A);      :REM*47
320 PRINT#15,"U2";2;0;18;S
                              :REM*73
330 GOTO160                  :REM*101
340 CLOSE2:CLOSE15:PRINT"{SHFT C
    LR}BYE...":END            :REM*63
350 PRINT"{CRSR DN}{COMD A}{32 S
    HFT *s}{COMD S}"        :REM*189
360 PRINT"{SHFT -}{32 SPACEs}{SH
    FT -}"                     :REM*3
370 PRINT"{COMD Z}{32 SHFT *s}{C
    OMD X}":PRINT" {UP ARROW}"
                             :REM*149
380 PRINT" {COMD Z}{2 SHFT *s}{S
    HFT F}ILE {SHFT T}YPE {SHFT
    C}ODE:"                  :REM*167
390 PRINT"{4 SPACEs}A=SEQ B=PRG
    C=USR D=REL"              :REM*11
400 PRINT:PRINT"{CTRL 9} {SHFT S
    }HIFTED={SHFT L}OCKED{2 SPAC
    Es}{SHFT U}NSHIFTED={SHFT U}
    NLOCKED "                :REM*125
410 RETURN                   :REM*213
420 DATA2,34,66,98,130,162,194,2
    26,0                       :REM*9
```

■

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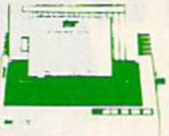

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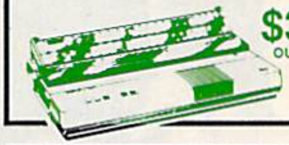

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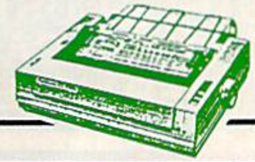

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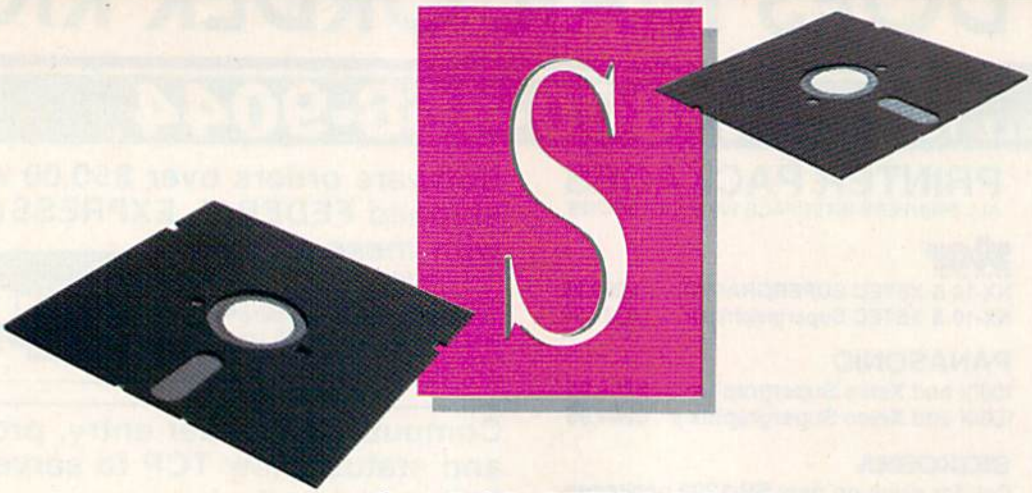

Compiled By BETH S. JALA

Destiny

B

Have Joystick, Will Travel In This Point-And-Click Adventure

Some game manufacturers take pride in their adventure games' ability to understand complex sentences. But if you don't like to type or you're a hunt-and-peck typist, having to enter complete sentences to make yourself understood can take the fun out of playing.

Destiny is a graphics adventure/role-playing game that eliminates this problem by requiring you to input only 23 simple verbs and the four major compass directions. You simply select the desired action from an on-screen list by pointing to your choice with a joystick-controlled hand icon and pressing the fire-button.

An inventory of the objects you acquire during the game is displayed when you select the List command or when you choose Use, Give or Put. Destiny also keeps track of traits such as your age, strength and health, as well as the number of gems and units of gold you possess.

When you encounter one of the many unfriendly creatures that roam the countryside, a tunnel or the underground city, a menu with three new options appears. You can attack, bribe the monster with gold or try to run away. If you attack first, you're liable to strike a damaging blow, but if you try to escape, you could fail, and your enemy might strike. By offering a bribe, you give up 50 units of gold, but in return you receive a clue that could help you out of some tight spots.

Because Destiny limits your input to the on-screen word list, you usually can figure out what to do in a given situation by trying all the possibilities. Nevertheless, other factors still make the game a challenge, especially for novice or intermediate adventurers. For example, many of the objects that you need to complete the game are carefully hidden in the graphics without a clue to their location. To find them, you must "feel" your way around each picture with the hand icon.

Destiny's faults are that you can save only one game in progress and when you save, you can't continue the adventure without rebooting and loading the saved game. Similarly, when your character bites the dust, there's no play-again option.

Aside from these limitations, Destiny is an enjoyable adventure that's probably challenging enough for all but advanced players and is perfect for anyone who's better at pointing and clicking than typing. *(Software Investments Plus, Inc., PO Box 13, Appleton City, MO 64724. C-64/$24.95 disk.)*

Bob Guerra
Charlestown, MA

Report Card

A	***Superb!*** An exceptional program that outshines all others.
B	***Very Good.*** One of the better programs available in its category. A worthy addition to your software library.
C	***Good.*** Lives up to its billing. No hassles, headaches or disappointments here.
D	***Mediocre.*** There are some problems with this program. There are better on the market.
E	***Poor.*** Substandard, with many problems. Should be deepsixed!

Ghostwriter 128

A

A Word Processor From the Past Rears Its Useful Head

In the early days of the C-64, many of us cut our word processing teeth on a program called Omniwriter. Although Omniwriter is now old in software terms, a lot of people still use this classic. It has withstood not only the test of time but also the test of later challengers. For those who've moved on to the C-128, Omniwriter has been reincarnated in the form of Ghostwriter 128.

After the normal autoboot process, you're presented with the default screen. Although I found the default colors to be less than wonderful, the text, background and command bar can be cycled through the full range of colors until you find the combination you prefer. This operation also will introduce you to the formatting commands of Ghostwriter. The harmony of commands makes it easier to

Mildred Find the Wilson file!
Wilson File!?
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CARSON CITY
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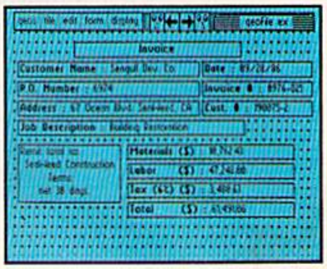
BY THE TIME SHE GETS TO "PHOENIX," HE'LL BE SLEEPING.

Having thousands of facts is one thing. Finding the ones you need is another. Which is why you should consider buying geoFile. The easy-to-use database manager for GEOS-equipped Commodores.

Whether they're receivables or recipes, once you have geoFile, you can fly through facts in seconds, clicking and picking the ones you want, just the way you want them.

It's as simple as filling out a form.


geos
file
edit
form
display
geofile ex

Invoice

Customer Name

Date

P.O. Number

Invoice #

Address

Cust. #

Job Description

Materials ($)

Labor ($)

Tax (6%) ($)

Total ($)

The geoFile "form" organizes all kinds of information. Like names, numbers, rates of objects' acceleration when dropped from two-story buildings—you name it. As much as you can fit on a printed page.

Once your data is in, the real fun begins.

You want names of bus drivers? From Arizona? Under five foot six? Between the ages of 33 and 35? With incomes of $22,396 or more? Who sneezed in June?

Just click your mouse and watch geoFile go to work. Searching. Sorting. Comparing and listing the data alphabetically. Or numerically. Or in whatever priority your form specifies.

You can put the data into form letters and lists with geoMerge. Or into math functions, with geoCalc. Or if you really want to get fancy, you can display your information graphically with geoChart.

And geoFile does it all in seconds.

Now, with all that in mind, what are you going to do—spend a few bucks on geoFile?

Or spend all night wishing that you had?

To order call 1-800-443-0100 ext. 234

geoFile $49.95

(California residents add 6.5% sales tax.)
$2.50 US/$5.50 Foreign for shipping and handling. Allow six weeks for delivery.

Commodore and Commodore C64 are trademarks of Commodore Electronics, Ltd. GEOS, geoFile and Berkeley Softworks are tradenames of Berkeley Softworks.

GEOFILE

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The brightest minds are working at Berkeley.

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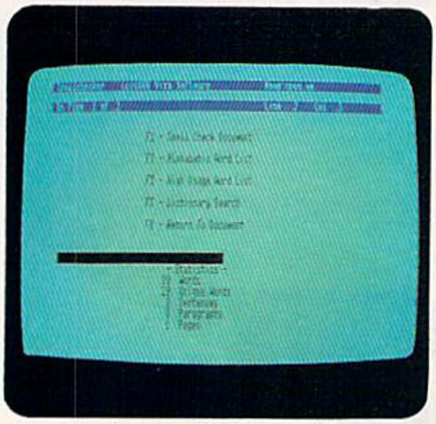
commit to memory those that are most frequently used.

The list of commands is long, but it contains the text-editing features you'd expect in a good word processor—block move and copy, search and replace, document merge, insert and delete, and autopagination. You can call up a DOS wedge that lets you display a directory or format, scratch or rename a disk.

With both standard and numerical tab settings, Ghostwriter makes it easy to align columns, especially if those columns happen to be made up of numbers that must be aligned on the decimal point. Visible margins, word wrap and optional display of page breaks complete the word processor's features.



Use Ghostwriter 128 to check your spelling.

Ghostwriter's word processor and 30,000-word spelling checker fit on one side of a disk, thus eliminating swapping or flipping disks, contributing to speed and convenience.

The spelling checker provides a list that tallies things such as the number of words, number of unique words, and number of paragraphs in a document. It then asks you to insert the dictionary disk. Since the dictionary is on the same disk, you just hit the return key to display a two-column screen that lists all the words in the document, each preceded by a number indicating its frequency of use. Each word is highlighted as it's checked, and if not recognized by the dictionary, the word will remain highlighted.

The Mail Merge feature doesn't require merged data to be pulled from a particular database. Instead, you create your document with Mail Merge blanks in the proper places, then go to the alternate work screen to enter the information to fill in the blanks.

Many powerful word processors require that printer codes be set up as a series of dot commands preceding the body of the document. Ghostwriter 128 facilitates by allowing you to make selections from a print menu.

More than a dozen printers are supported by drivers within the program. Note that the use of text emphasis, such as boldface, underlining, subscripts and superscripts, is determined by your printer's capabilities. In addition, if your printer will accept them, you can use ASCII codes for fonts such as italic and double strike.

The documentation for Ghostwriter 128 is well written. The manual is divided into sections arranged in logical sequence, with a table of contents and an index for quick and easy reference.

My only criticisms of the program are the Default Color mode, which can be changed, and the fact that the spelling checker doesn't automatically provide you with possible spellings for unrecognized words. A search feature will look through the dictionary, however, and present you with the correct spelling.

These problems are minor, and it might be that a more sophisticated spelling checker for the C-128 is not yet possible. In any event, Ghostwriter 128 offers ease of use and high-power capabilities that are as good as anything I've seen—and better than many. *(HesWare, 390 Swift Ave., Suite 14, S. San Francisco, CA 94080. C-128/ $39.95 disk.)*

Ervin Bobo
St. Peters, MO

Super Sunday

B+

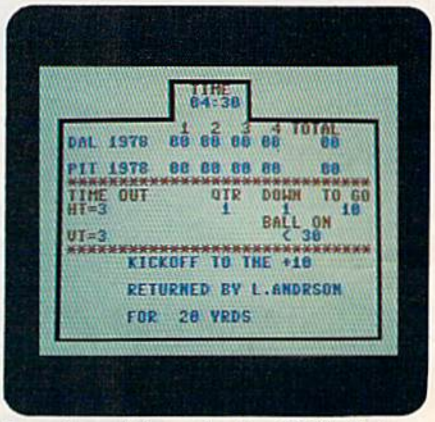
Have the NFL At Your Fingertips All Week Long

Given American attitudes toward football, especially our penchant for Monday morning quarterbacking and for making a national holiday out of the Super Bowl, Super Sunday is almost certain to be a winner.

The game involves you in a match-up between the greatest pro football teams of our time. Starting with the winner of the 1966 Super Bowl and ending with the victor in 1985, you can pick any two teams, match them in your own Home Bowl and let the arguments fall where they may.

Super Sunday can be played by one or two players. For a one-player game, the keyboard probably offers the best control. For two players, your selections can be made by joystick, thus keeping your computer table from being crowded with knees and elbows, as well as potato chips and beer.

You can select the visiting and home teams, game time, formations, and offensive and defensive teams. If you're dealing with teams so old you can't remember individual performances, each quarterback or runner listed is accompanied by his passing or rushing statistics, respectively.



```
              TIME
              04:30
           1  2  3  4 TOTAL
DAL 1978  00 00 00 00    00
PIT 1978  00 00 00 00    00
**********************************
TIME OUT        QTR  DOWN  TO GO
HT=3             1    1     10
                     BALL ON
VT=3                  < 30
**********************************
      KICKOFF TO THE +10
      RETURNED BY L.ANDRSON
      FOR  20 YRDS
```

Scoreboard from Avalon Hill's Super Sunday.

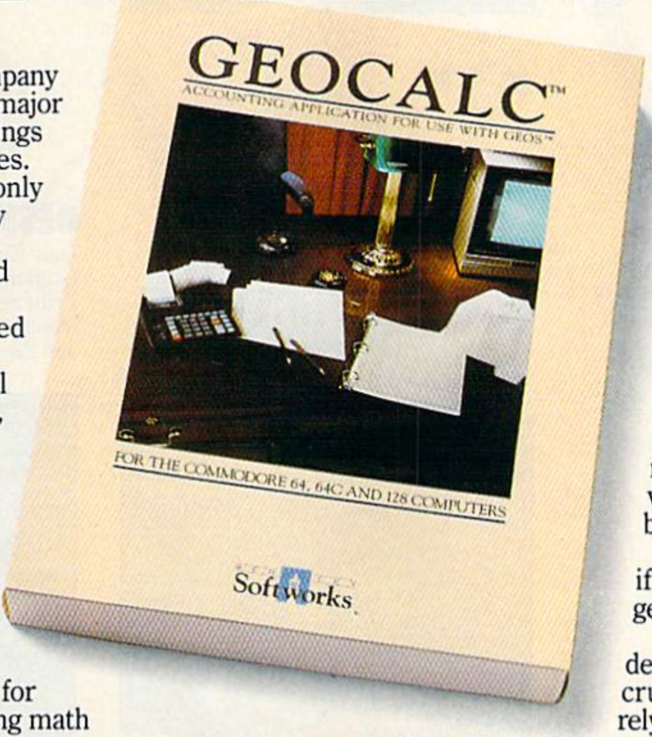
When you're presented with an overhead view of the scene, keep in mind that your computer is showing you almost one half of a football field, as well as 22 players. Graphics for the players are not great, but you can tell the different teams by the color of their uniforms.

To start a play, press the return key. It will seem as though you're watching a long shot on television: The players begin to move, the ball is thrown and (possibly) caught, and your man makes a run for a touchdown. After each play, a status board displays the score, time remaining, quarter, down and yards to go, and yards gained or lost.

If you don't feel up to coaching a Super Bowl team, Super Sunday allows for an autoplay mode in which each team selected plays according to the statistics compiled during the regular season of that particular year. Super Sunday also has provisions for

Continued on p. 24.

WE'RE SELLING THE ONE THING WE COUNT ON EVERY DAY.

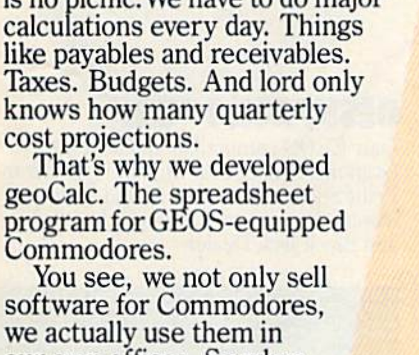

GEOCALC™
ACCOUNTING APPLICATION FOR USE WITH GEOS™
FOR THE COMMODORE 64, 64C AND 128 COMPUTERS
Softworks

Running a software company is no picnic. We have to do major calculations every day. Things like payables and receivables. Taxes. Budgets. And lord only knows how many quarterly cost projections.

That's why we developed geoCalc. The spreadsheet program for GEOS-equipped Commodores.

You see, we not only sell software for Commodores, we actually use them in our own offices. So when Lee needs to project inventory costs, or Brian wants to figure employee bonuses, the first thing they do is load up geoCalc.

The very same spreadsheet you can use at home for figuring finances, mastering math mysteries or personal production predictions.



Operating Expenses

	A	B	C	D
4	Operating Expense			
5		January	February	March
6	Raw Materials	11000	11750	10750
7	Manufacturing	15000	14500	14350
8	Rent	4000	4000	4000
9	Labor	20000	20000	21000
10	Utilities	3000	3150	3100
11	Transportation	8000	7000	8000
12	Overseas Shipping	4000	4500	4250
13				
14	Total	65000	65700	65450
15				
16	Grand Total		196150	

With geoCalc, you get 112 columns and 256 rows to fill with all kinds of text and numbers. And formulas that range from simple addition to arctangents and cosines that could knock any physicist cold.

There are investment functions. Averages. Even a random number generator. And writing your own formulas is as easy as, umm... one, two, three.

With mouse in hand, you can zip all over the huge spreadsheet, solving "what if" questions with a few quick clicks. Questions like, "If Sheila takes the waitress job, how much can we expect our taxes to increase?" Or "How much faster will the Chevy go if we rip out the muffler and the back seat?"

No matter what the problem, if it has to do with numbers, geoCalc can solve it. Fast.

So if you notice a need to decimate digits, consider crunching them with geoCalc. We rely on it for our business. In fact, we couldn't manage without it.

To order call 1-800-443-0100 ext. 234

geoCalc $49.95

(California residents add 6.5% sales tax.)

$2.50 US/$5.50 Foreign for shipping and handling. Allow six weeks for delivery.

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GEOCALC

GEOS COMPATIBLE

Berkeley Softworks

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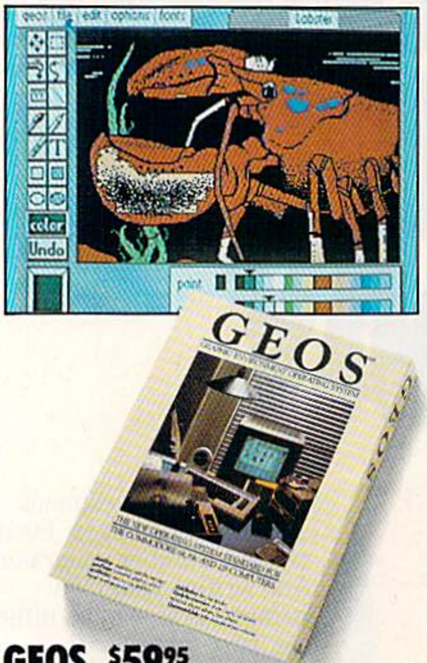
IF YOU STILL THINK CO
PLAY AROUND

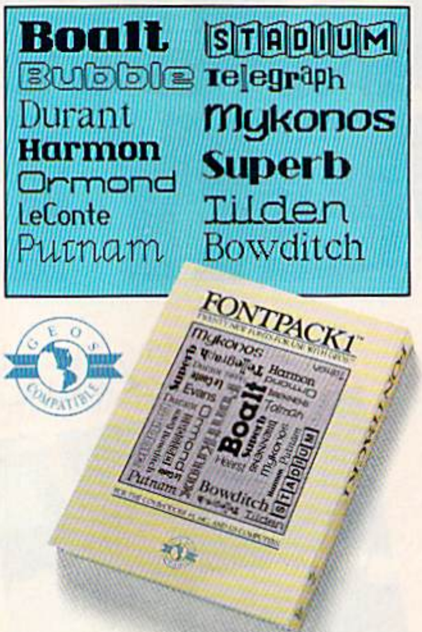

geos
file
edit
options
fonts
Lobster
color
Undo
paint
GEOS
THE NEW OPERATING SYSTEM STANDARD FOR THE COMMODORE 64 AND 128 COMPUTERS

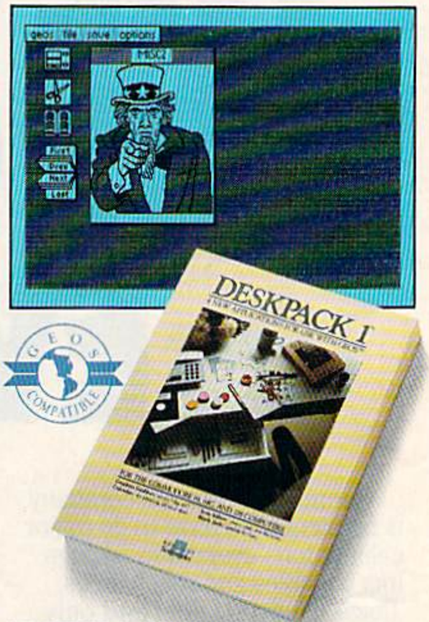
GEOS $\$59^{95}$

The Graphic Environment Operating System that opens up a whole universe of new possibilities for Commodores. With geoWrite, geoPaint, fast-loading diskTurbo and support for all GEOS-compatible applications.

FONTPACK 1 $\$29^{99}$

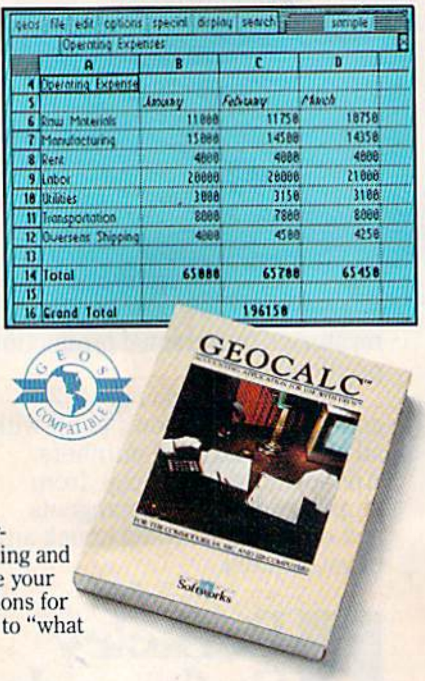
A collection of 20 more fonts for use with GEOS applications, in various shapes and sizes for more expressive and creative documents.


Boalt
STADIUM
Bubble
Telegraph
Durant
Mykonos
Harmon
Superb
Ormond
Tilden
LeConte
Putnam
Bowditch
GEOS COMPATIBLE
FONTPACK1


geos
file
move
options
MISC2
GEOS COMPATIBLE
DESKPACK I

DESKPACK 1 $\$34^{95}$

Four GEOS-compatible applications: Graphics Grabber for importing art from Print Shop,™ Newsroom™ and Print Master™ graphics; Calendar; Icon Editor and Black Jack Dealer.

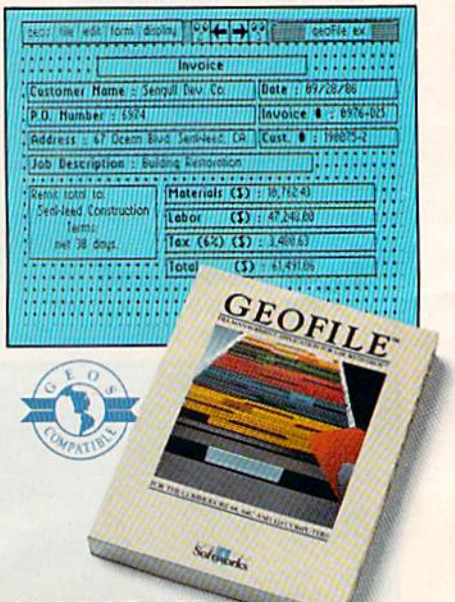

geos
file
edit
options
special
display
search
sample
GEOS COMPATIBLE
GEOCALC
Softworks

Operating Expenses

	A	B	C	D
4	Operating Expense			
5		January	February	March
6	Raw Materials	11000	11750	10750
7	Manufacturing	15000	14500	14350
8	Rent	4000	4000	4000
9	Labor	20000	20000	21000
10	Utilities	3000	3150	3100
11	Transportation	8000	7800	8000
12	Overseas Shipping	4000	4500	4250
13				
14	Total	65000	65700	65450
15				
16	Grand Total		196150	

GEOCALC $\$49^{95}$

The GEOS-compatible, number-crunching spreadsheet for tracking and analyzing numerical data. Create your own formulas, perform calculations for anything from simple geometry to "what if" cost projections.


geos
file
edit
form
display
geoFile ex
GEOS COMPATIBLE
GEOFILE
Softworks

Invoice

Customer Name : Seagull Dev. Co.
Date : 09/28/86
P.O. Number : 6974
Invoice # : 0976-025
Address : 67 Ocean Blvd. SeaHead, CA
Cust. # : 190075-2
Job Description : Building Renovation

Remit total to:
SeaHead Construction
Terms:
net 30 days.

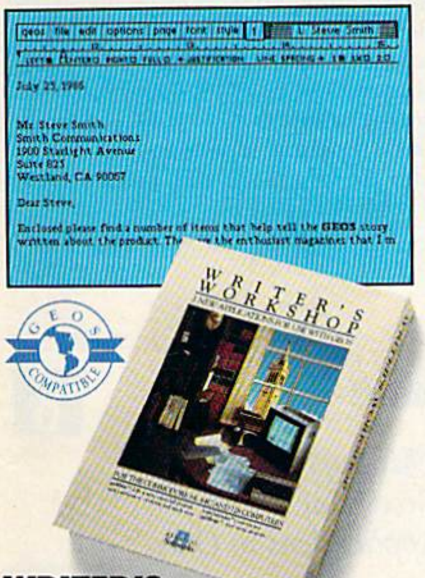
Materials ($) : 10,762.43
Labor ($) : 47,240.00
Tax (6%) ($) : 3,488.63
Total ($) : 61,491.06

GEOFILE $\$49^{95}$

The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there.

Circle 134 on Reader Service card.

MMODORES ARE TOYS, WITH THESE.



July 23, 1986

Mr Steve Smith
Smith Communications
1900 Starlight Avenue
Suite 823
Westland, CA 90067

Dear Steve,

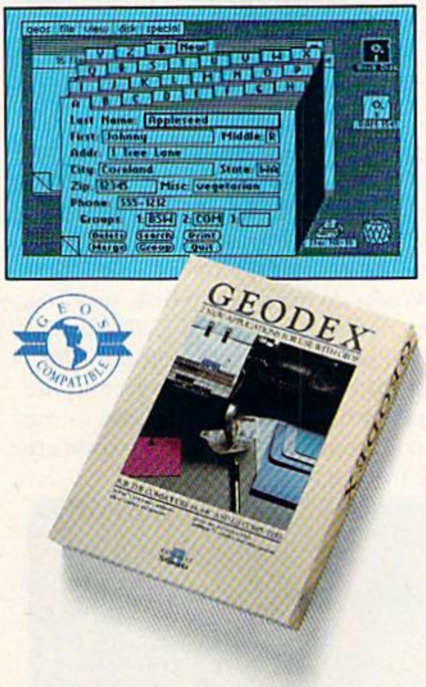
Enclosed please find a number of items that help tell the **GEOS** story written about the product. The are the enthusiast magazines that I m

WRITER'S WORKSHOP $49.95

All the GEOS-compatible tools a writer needs, including geoWrite 2.0 with headers, footers and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip™), geoMerge and LaserWriter printing capability.

GEODEX $39.95

The GEOS-compatible directory that allows you to create lists by name, address, phone number, etc. Includes geoMerge to customize form letters and invitations.



Last Name: Appleseed
First: Johnny Middle: R
Addr: 1 Tree Lane
City: Coreland State: WA
Zip: 12345 Misc: vegetarian
Phone: 555-1212
Groups: 1: BSW 2: COM 3:

GEOPRINT CABLE $39.95

The six-foot cable that speeds up printing because it's parallel—not serial. Connects easily to Commodores with fewer wires and no interface box.

GEOS
COMPATIBLE
GEOPRINT CABLE
Softworks

To order call 1-800-443-0100 ext. 234
(California residents add 7% sales tax.)
$2.50 US/$5.50 Foreign for shipping and handling. Allow six weeks for delivery.
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Sooner or later, you're going to discover that there's more to Commodores than fun and games.

You're going to discover power.

Not the kind of power that blasts aliens out of the galaxy. But the kind that whips through boatloads of data in seconds. The kind that crunches numbers and drafts documents like child's play.

The kind you find in GEOS.

Every GEOS application can take your Commodore from "mastering the universe" to a university master's degree, with all kinds of advanced capabilities that function at hyper-speeds you never imagined possible.

So if you're tired of toying with technology, try playing around with GEOS. Once you feel its power, you'll know that for anyone who still thinks Commodores are toys, the game's over.

Berkeley Softworks

The brightest minds are working at Berkeley.

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From p. 20.

removing injured players; calling, accepting or declining penalties; and going into sudden-death overtime.

The documentation is good, telling you how to control the game and, after a summary of some of the best Super Bowl games, leaving you alone to play. Although the graphics are excusable, the sound leaves a lot to be desired. It's limited to crowd noise, which seems as if it's been issued from a static generator.

Oh, well, you didn't come for the noise anyway. Turn down the volume, pop open a can of something cold and enjoy the game! *(Avalon Hill Game Co., 4517 Hartford Road, Baltimore, MD 21214. C-64/$35 disk.)*

Ervin Bobo
St. Peters, MO

Fleet Filer

A

The Search for An Integrated Database And Word Processor Is Over!

Fleet Systems II and III fans will be glad to hear that their already good word processor has just gotten better. The manufacturers of Fleet System, Professional Software, Inc., have released a compatible database program called Fleet Filer.

I speak as one who has suffered the time-consuming agony of manually entering multiple lists into word processors. I can also attest to the fact that the properly executed integration of a database with a word processor greatly increases the usefulness of both programs.

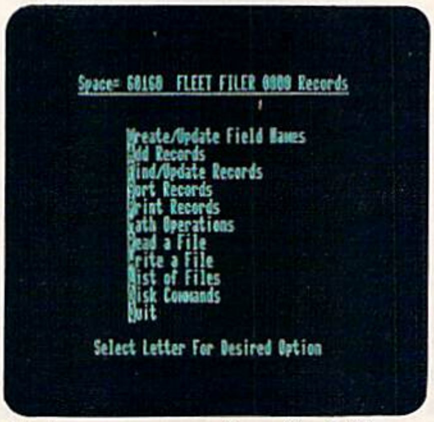
Two separate programs—an 80-column C-128 database and a C-64 database—that possess identical menu options are included in this single-disk software package. The files created by the C-64 version can be used in the C-128 version and vice versa.

Nearly every aspect of Fleet Filer, from its easy-to-use design to its informative user's guide, is uncomplicated and straightforward for both experienced and inexperienced database users. One option missing from many less sophisticated databases is the use of commas and colons in field data.

Both versions possess one of the fastest record-scanning capabilities I've seen, but they lack a jump command in Record Viewing mode, so there's no easy way to move to a particular record number. Also, while you can scan forward and backward through your records, Fleet Filer doesn't return you to the beginning of the file when you reach the last record. I found that I could circumvent this problem by exiting to the main menu and scanning from the beginning of the records.

One weakness in designing record formats is evident. If, for example, you've entered the titles of the seven fields that constitute a particular record format, then decide to add an eighth field, you can't do so without entering the names of fields 1 through 8. Field names can be up to 20 characters long, so this could result in quite a lot of typing.

When saving a file to disk, two files are created automatically. The first is identified as a data file on the directory with the suffix .d. The second file is saved under the same name as the first, except it has a .i suffix to indicate the information format.



```
Space= 60160  FLEET FILER 0000 Records

Create/Update Field Names
Add Records
Find/Update Records
Sort Records
Print Records
Math Operations
Read a File
Write a File
List of Files
Disk Commands
Quit

Select Letter For Desired Option
```

Main menu screen from Fleet Filer.

When printing, you can create various formats for your output. After selecting a print option, just answer the prompts specifying the size—one to six lines—and the spacing of your printout. You can then configure each printed line to contain whatever fields you desire. Fleet Filer works perfectly with continuous labels, as you can set the spacing between any size label.

Incorporating the files you create into the Fleet System II word processor is relatively painless. The data files created with Fleet Filer are in Commodore ASCII. After you load them into your word processor, they appear on the screen in the same format as you used to save them. Also, the files are, for the most part, compatible with the RUN Script word processor. You simply place a return after the graphics character Fleet Systems II and III use for a return symbol.

While Fleet Filer is an improvement for Fleet System II, it makes Fleet System III exceptionally versatile. With the added ability to incorporate records and lists into your word processing files, Fleet Filer is a worthy addition for all Fleet System users. *(Professional Software, Inc., 51 Fremont St., Needham, MA 02194. C-64, C-128/$39.95 disk.)*

Tim Walsh
***RUN* Staff**

Jane

B

This Super Secretary Gives You Three Applications in One.

Just as the readers with Dick, Jane and Spot taught millions of kids how to read, so Commodore's Jane is easing C-128 owners into a new era of applications software. Jane is a word processor, a spreadsheet and a filing system, all on a single disk.

Like those readers, Jane is simple. Even if you don't know a spreadsheet from a database, this program will make you glad you bought a computer.

The Commodore package contains three color-coded disks and a user's manual, but don't even bother with the instructions. Just plug your joystick or mouse into port 2, pop the applications disk into the drive and turn on your computer. Jane loads automatically.

You'll see a screen full of icons—graphics characters that represent the functions Jane is ready to perform. If you're just learning and want some assistance, many of the help screens feature animated demonstrations.

Clicking the pointer over the file cabinet moves you to JaneList. As soon as the JaneList screen comes up, you're ready to enter data. There's no need to construct records and define fields—you don't even have to know what they are.

JaneList is organized like a file drawer full of index cards. You just select one of the eight empty lists and begin filling in the blanks. If you wish to organize data in a unique fashion, ignore the existing formats and design your own special list.

Retrieving your records, controlled through another set of icons at the bottom of the screen, is also quite simple. JaneList will sort and search for information and display it or send it to the printer. Printouts are limited to three formats—mailing labels, parts of lists or individual file cards.

If you find yourself becoming infatuated with this charmingly easy software, it's time to point out that Jane isn't perfect. For instance, I occasionally was frustrated by the disappearance of the little tool that moves across the screen in response to the joystick. It didn't take long to realize that I was inadvertently moving it off the screen and burying it under the border of my monitor—an unnecessary nuisance.

There's a good chance you'll spend most of your time with JaneWrite, the word processing part of the program. Once you name the document on which you wish to work, you can begin entering text. This probably will be the first time you realize that Jane runs on the 40-column side of your C-128.

If the side-scrolling screen doesn't let you see enough of your letter, you can change to a 64- or 80-column display. Unfortunately, the 80-column characters are difficult to read. You might want to enter and edit in 40 columns and switch to 80 to check the layout.

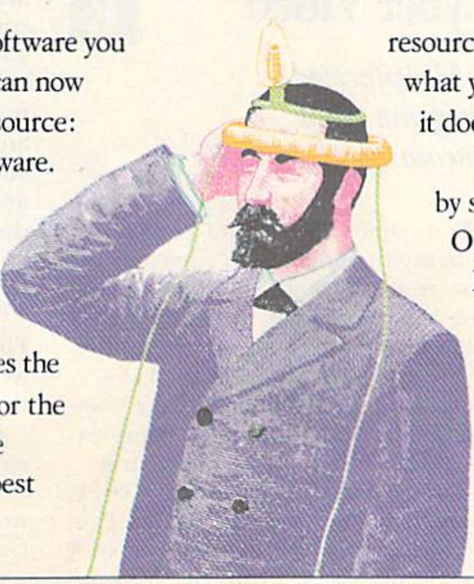
JaneWrite lets you automatically indent paragraphs. You also can reformat individual lines, as well as cut, paste and copy. All of these operations are carried out by swapping the pointer for scissors, camera or glue and clicking the joystick button. With JaneWrite, you can change printer font and type size at any time, even in midword.

Finally, there's a spreadsheet for those who've never used one—JaneCalc. Entering formulas is a snap because Jane does all the work. All you do is click the pointer over the cells you wish to include. Even complicated calculations are entered with ease.

JaneCalc is slow and relatively small, however, and it allows only eight-column cells and a maximum of two decimal places. Like JaneWrite, it's difficult to read in the 80-column mode. It can also be difficult to use with only 40 columns displayed because the labels scroll off the screen. Without any shading to define the rows and columns, it's easy to get lost in the program. These shortcomings are obvious to anyone who's familiar with spreadsheets, but it's only a minor inconvenience for someone who's a newcomer to this particular application.

Getting to know Jane unveils some other flaws that aren't as easily ignored. The printer routines are slow, and it's necessary to end a spreadsheet printout manually, unless you are willing to wait while Jane wastes time and paper printing empty cells. The program's biggest flaw is its failure to take full advantage of the C-128's 80-column screen. You must squint to see what the hardware is capable of displaying clearly.

Still and all, this program is a must for beginners of all ages. Even if you



If you feel like a lost soul when it comes to music software, get the bible.

Almost every bit of music software you could possibly want or need can now be found in a unique single source: Coda, the bible of music software.

Detailing over 500 items which range from software to accessories to books, Coda is a remarkably user-friendly catalog that takes the confusion out of searching for the right music software. It's the computer-using musician's best resource today. In fact, if you can't find what you need in Coda, chances are it doesn't exist.

Order Coda today for only $4.00, by simply calling the number below. Or write to: Wenger Corp., 555 Park Drive, Dept. R2, Owatonna, MN 55060. It's not only inspirational, it's divine guidance.

Coda. 1-800-843-1337.
All major credit cards accepted.
Or call collect 1-507-451-1951.

Circle 86 on Reader Service card.

learned to read without Dick, Jane and Spot, Commodore's Jane will teach you a lot about what you can do with your C-128. *(Commodore Business Machines, Inc., 1200 Wilson Drive, West Chester, PA 19380. C-128/$49.95 disk.)*

John Premack
Lexington, MA

Speed King

C

High-Speed Racing
At a Low Price

If you're partial to decent software at bargain prices, Mastertronic's Speed King should look very attractive to you. But if you're the type who craves innovation and state-of-the-art programming in your computer games, Speed King won't be very appealing.

Price is the first thing most Commodore owners notice about Speed King. Few new software programs sell for less than ten dollars. But once that price tag catches your eye, it's only natural to wonder what you're getting for your money.

The answer is a middle-of-the-road version of a very common type of computer game—a motor racing simulation. In this case, the player races a motorcycle around one of ten famous racetracks. The player can also pick from three different skill levels and two-, four- or six-lap races. All the races feature competition against 19 other riders, but one option permits players to make a practice run with no one else on the track.

Your motorcycle appears at the bottom of the monitor near the center of the screen. Using either a joystick or the keyboard, you can shift gears, change direction and lean the cycle left or right to make it stay on course as the winding track scrolls continuously toward you. Superimposed over the sky at the top of the screen is information stating your position on the track in relation to the other competitors, your speed, the elapsed time, your fastest lap run and the gear your bike is in. There are six gears, each of which corresponds to a speed range. You obtain the fastest lap times by being in the appropriate gear for the situation.

Like most such games, the object of Speed King is to stay on track, avoid collisions with other competitors and finish in front of the pack. You'll take a spill whenever you run into another biker or run off the track, and you'll lose valuable time in the process.

There's not much more to Speed King than that. Its best features are its price, its multiple play options and the challenge of shifting gears to achieve top performance.

Speed King's biggest drawbacks are its graphics and control response. The graphics aren't much better than what was available for the first home video games and are primitive compared to what's currently available for the C-64. Images are very blocky, and although each track has its own distinctive background, that background fails to get larger as your bike moves toward it—which, of course, hurts the illusion of movement. Control response is sloppy. Gear shifting is balky, and avoiding another cyclist is sometimes difficult because your bike won't turn as quickly or smoothly as you might like.

In determining whether to purchase this program, you must decide whether Speed King's attractive price is worth overlooking the shortcomings. *(Mastertronic International, Inc., 7311B Grove Road, Frederick, MD 21701. C-64/$9.95 disk.)*

Scott Wasser
Wilkes-Barre, PA

Cyber Video

B-

A Multifaceted
Program That
Encourages Creativity

Sometimes a program consists of so many features that it's hard to decide which to highlight first. In the case of Cyber Video, three integrated modules allow easy access to graphics, music and animation on the C-64. A quick look through the 92-page manual will convince you of the complexity of Cyber Video's many features.

The Cyber Video disk isn't copy-protected, allowing easy backup. Protection is provided in the form of a dongle that comes with the package and must be inserted in the joystick port for proper operation. Cyber Video also requires a KoalaPad, formerly manufactured by a company that has since sold out. The Commodore mouse should work with future versions of the program, according to Cyber Video's creators.

The music module is the program's *piece de resistance.* A minicourse in music theory makes composing quite easy. The main workspace of the music module is composed of three musical staffs, one for each of the C-64's voices. Notes, time signatures, rests and other musical notations are displayed at the top of the screen. You can move them to any point on the staff. There's even a cut-and-paste-type editor that allows you to maneuver sections of your composition. The major drawback is that you can move notes only on the same staff, not from one staff to another.

Other screens let you select from a group of preprogrammed musical voices—everything from guitar to piano sounds. You can also create custom instruments. Disappointingly, you can't print your composition with Cyber Video; you can display it only on the screen.

The graphics section uses bit-mapped, high-resolution graphics. You can have a 0 or 1 at each point in the graphics map. It's possible to specify color only down to the size of a regular text character. That means that within a standard-size block, you can have only two colors—one represented by the zeros and the other by the ones within that block. Other programs use this mode, but if you aren't familiar with it, you might become confused as you try to create your image.

Standard features in the Draw command permit you to create lines, rectangles and circles with ease. All the choices, including selection of colors, appear in the form of drop-down windows. I found it very difficult to paint in this fashion, rather than being able to point at the color I wanted.

You can choose between Normal and Fine Drawing modes. I found the resolution in both modes to be superior to those in several other programs.

Zoom mode lets you enlarge a small section of your picture for more detailed work. Two screens let you work on several pictures at once and transfer between the two. There's also a pan option that lets you move horizontally between two pictures.

Cyber Video includes the ability to create and edit sprites. There's a lot of flexibility here, but, unfortunately, I found the documentation for using this capability incomplete.

The Animation module is the most notable section of Cyber Video. Animation can consist of a simple sequential slide show or more complex things such as alternating between two graphics screens or having geometric images drawn on the screen as other things take place simultaneously. I spent nearly eight hours trying to master just the basics by using the examples contained in the instruction manual and had only moderate success. The same detail and effort present in the instructions for the Music module should be incorporated into the animation and graphics sections.

The demonstration disk includes some excellent examples of the program's capabilities. The combination of graphics, motion and music is very impressive. A utility program called Cyber Run lets you show animation without having Cyber Video loaded or a KoalaPad or dongle present.

Cyber Video is packed full of features and undoubtedly represents a good dollar value. The second half of the documentation, however, needs some serious revision. *(Touchstone, PO Box 1378, Coeur d'Alene, ID 83814. C-64/$39.95 disk.)*

Jim Grubbs
Springfield, IL

World Games

A–

Experience the Thrill Of Victory and The Agony of Defeat

Epyx' World Games is a smashing sequel to that company's software series, Summer Games I and II and Winter Games.

You might be aware that the first three games are computer versions of Olympic contests such as pole-vaulting, fencing and figure skating. The programs are realistic sports simulations distinguished by challenging game play and fabulous graphics.

World Games features more of the same. It picks up where the Olympic simulations left off by offering eight more sports, each peculiar to a different country, and an attention to subtle detail that gives it a rich character and flavor all its own. You can go cliff diving in Mexico, logrolling in Canada, weight lifting in the Soviet Union, sumo wrestling in Japan, barrel jumping in Germany, slalom skiing in France, caber tossing in Scotland and bull riding in the good ol' U.S.A.

In the weight-lifting event, good timing and strategy enable you to lift the most weight, but remember that the heavier your load, the slicker your joystick jockeying will have to be. While you're trying to master the moves, take note of the particulars: You can hear your on-screen character take a few deep breaths, see him flex his fingers and grimace, and watch his face turn red and purple while hoisting the heavy steel.

The idea behind barrel jumping is to build up speed by moving the joystick back and forth, then leap at just

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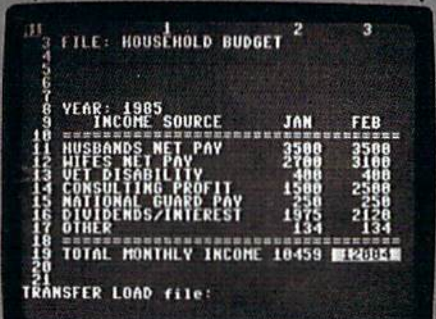

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 4
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 8 YEAR: 1985
 9    INCOME SOURCE          JAN     FEB
10 ===================================
11 HUSBANDS NET PAY          3500    3500
12 WIFES NET PAY             2700    3100
13 VET DISABILITY             400     400
14 CONSULTING PROFIT         1500    2500
15 NATIONAL GUARD PAY         250     250
16 DIVIDENDS/INTEREST        1975    2120
17 OTHER                      134     134
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19 TOTAL MONTHLY INCOME     10459   12004
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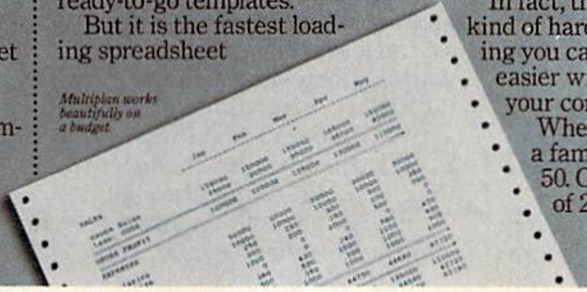


Multiplan works beautifully on a budget.

Circle 85 on Reader Service card.

the right moment. The graphics are superb, particularly the ice-skating motion, which looks more like a film than a computer image. Also pay attention to the skater's reaction as the number of barrels to be jumped increases.

The more guts you have, the higher the altitude from which you'll want to leap in cliff diving. While the graphics and sound are superb in this event, the action isn't very intriguing. Scores are determined by a diver's form, but there simply isn't a lot you can do with the joystick to make one dive better than another.

Like all the other World Games events, you view slalom skiing from the same perspective you'd have if you were watching it on television. The best thing about this event is the way it conveys the feeling of skiing: Sharp turns slow you down, and keeping your skis pointed downhill for too long will result in uncontrollable speed.

Logrolling is the simplest event and also quite boring. You must try to stay afloat by moving the joystick back and forth to keep the log rolling at a steady pace. You probably won't want to spend much time on this event, unless it's to see the expressions on the lumberjacks' faces when they take a plunge.

Every aspect of bull riding is first rate, from the challenging technique required to stay on board a bucking bull to the cowboy's reaction when he's finally thrown. An interesting feature allows another person to control the bull with a second joystick, giving you a chance to break in your boots slowly.

The caber toss comes right from the Scottish Highland Games. As its name suggests, the object is to toss a caber—a small tree trunk—farther than anyone else. In World Games, cabers look more like sawed-off telephone poles, but doing well at this event does take coordination.

The most difficult event to master, because of a choice of 11 different moves, is sumo wrestling. Each technique is determined by the position of the joystick and whether the fire-button is depressed.

World Games has useful options that let you participate in all or some events, practice a given event until you master it, use one or two joysticks, and play against the computer or against as many as seven human foes. The program also keeps track of medal winners to determine a grand champion and saves record-setting performances for posterity.

Epyx deserves praise for including a built-in fast loader that gets World Games running on a 1541 drive in seconds rather than minutes. The fast loader gives you more time to enjoy the latest entry in one of the best action/strategy computer games around. *(Epyx, 600 Galveston Drive, Redwood City, CA 94063. C-64/$39.95 disk.)*

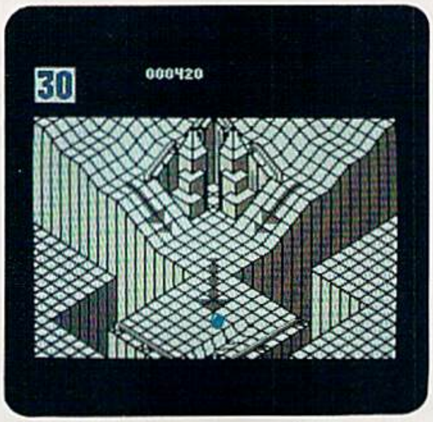
Scott Wasser
Wilkes-Barre, PA

Marble Madness

C+

Get Ready To Turn Your Computer Room Into an Arcade Parlor

Designed around the premise that losing your marbles can be fun, Marble Madness made the arcade parlor scene some months ago. It proved such a hit that Electronic Arts released a home computer version.



Out of the game room and onto your screen with Marble Madness.

Now you can challenge the clock or another player for high-score honors as you bash, blast and carom your marble along the same five far-out, futuristic courses as the original plus a new, Commodore-only, Secret Level. But convoluted curves and multiple routing—often through Rube Goldberg tubes, lifts and wave machines—are only half the story. The courses are infested with baddies such as Munchers, Steelies and Hoovers, all determined to see that you never finish. Sometimes, as in the Silly Level, even the physics becomes unglued!

All the contests begin at the first course, Level 1, with on-screen countdown timers set for about one minute of race time. Points are scored for feats such as sending a Steelie over the edge, but most come from multiplying seconds left on your timer at the finish.

In a two-player game, bonus time for the next course is awarded to the player who finishes first. You must, however, reach the goal before your timer goes to zero; otherwise your game is over.

Players have unlimited marbles, but losing one costs time, as it usually is replaced at the beginning of the current passage or obstacle. Similarly, scrolling of the multiscreen courses naturally tracks the leader's marble. A second player who lags too far behind will be jumped forward to stay on the display, but he or she is penalized several precious seconds.

Boasting attractive 3-D graphics, Marble Madness is a good game rescued from greatness by some unfortunate design choices. Instead of sharp, distinctive colliding and rolling sounds, you get barely audible knocking effects and loud background music. There's a ten-position High Rollers display, but it's not saved. When you turn off the computer, any unbelievably high score becomes just that—unbelievable.

The game's main weakness stems from its being a direct translation fresh from the arcade. Arrangements that require success on course A before going on to course B, and things such as short countdowns, conspire to provide very little playing time.

Most of the courses are very tough, and many would-be marble mavens will end up running the same lower-level courses over and over. There's no time for them to explore the numerous fascinating features of the landscape, engage in extended bashing duels or experiment with alternate routes. Marble Madness is fun reserved for the arcade elite. *(Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$29.95 disk.)*

Jeff Hurlburt
Houston, TX ■

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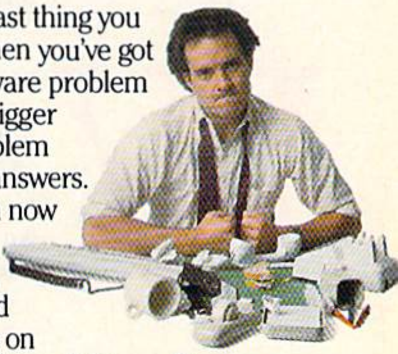

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DIGITIZING THE VIDEO CONNECTION

Enhanced computer art is at your fingertips with the three programs reviewed here.

By ERVIN BOBO

Whether you realize it or not, digitizers are everywhere. Remember those spectacular fly-by photos of Saturn that appeared in *Time* magazine last year? Before the photos were printed, they were digits in a computer. And when you stop at the mall to have your likeness printed on a T-shirt, you're seeing a digitizer at work.

What might come as an even bigger surprise is that easy-to-use digitizers are available for the C-64, offering you an entirely new source of computer graphics images.

You can use digitized images of family and friends in greeting cards, posters and newsletters; you can enhance them to use as original computer art; you can even transmit them by modem to help you become better acquainted with on-line friends. And, as an added advantage, you can enrich your overall computing experience as you learn some of the ways graphics are produced.

Video Acquisition

Before an image can be digitized, it must be acquired by the computer. For this reason, digitizers are more properly called video acquisition (VA) systems. Video acquisition is the process of putting a video signal into a computer and then digitizing that signal (in effect, reducing it to bits that are either on or off) in such a way that it can be filed on a disk, displayed on your monitor or sent to a graphics printer. In the last case, the acquired image can be saved in formats recognized and used by several popular graphics programs.

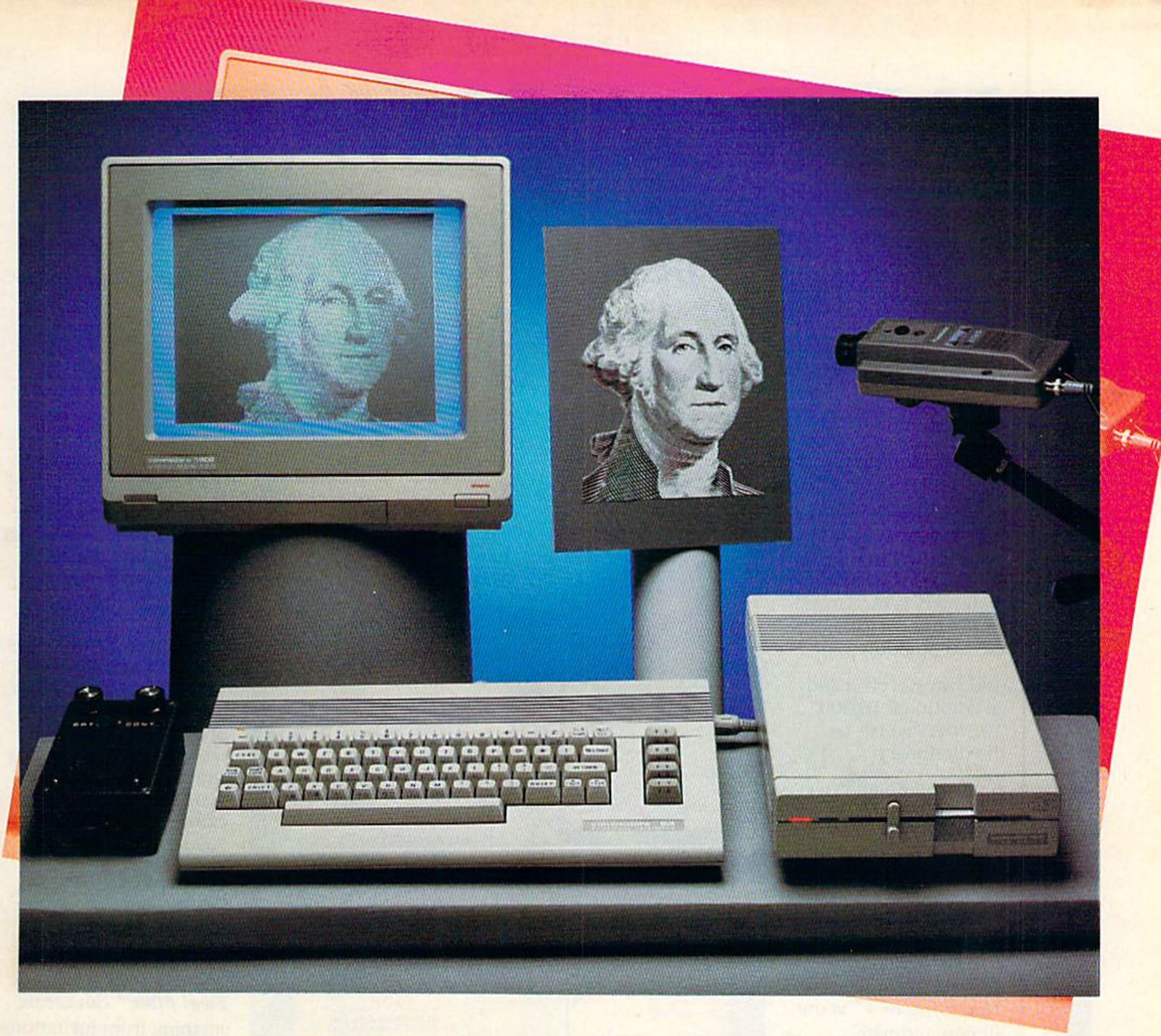
The ability to interact with creative graphics software such as Doodle!, Print Shop and Blazing Paddles is the most valuable aspect of VA systems. After all, you can only print your own image on a T-shirt so many times before you get tired of it—or find a shopping mall where you can start your own business.

With graphics software, you can use your digitized images as you would any other image in a dedicated disk library. Use a photo as clip art in Newsroom to illustrate your lead story; enhance or alter the image with Print Shop's graphics editor and use it to illustrate your letterhead or a greeting card; bring it into Doodle! or Blazing Paddles, add color or some other graphics enhancements, and present it as an example of computer art.

Because you'll be working with images of real people and objects, your creations will have a more personal touch, not to mention greater perspective. Anyone can send your Aunt Martha a Print Shop card illustrated with a line drawing of a dog, but only you can send one that has a digitized image of her favorite poodle.

Input Devices

Neither your computer nor your VA system cares about the origin of the input (a



Digitize me! George is all set up to be transformed into a digital image with the help of your computer system, video camera (right) and interface (left), which connects the camera to the computer.

video signal), as long as the signal is of the composite (NTSC standard) variety. Some video cameras send out a composite signal, while other signals must be converted into a composite signal. When no converter is available, a portable VCR will work fine. You can also use another computer as the source.

The converter device is a transformer that becomes a power supply for the video camera. Once popular as a means of connecting cameras to console VCRs, converters have been largely replaced by portable VCRs. Should you locate a converter, expect to pay $40 to $50 for it.

A VCR alone can be the source of an image if you have a good freeze-frame feature.

PHOTOGRAPHED BY LARRY DUNN

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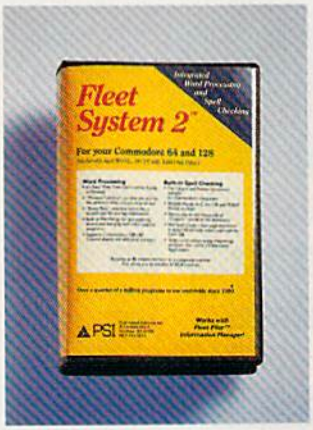
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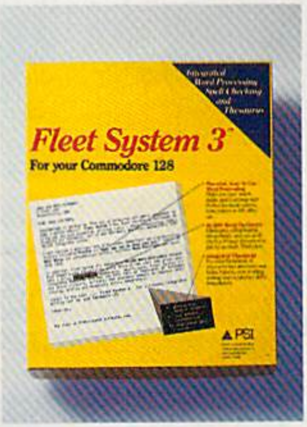
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VA systems use a method of image construction comprising several scanning intervals. Each interval requires about six seconds, and the highest acquisition levels entail eight such scans. If you're thinking of digitizing something from MTV, forget it—unless you can freeze on a single, clear frame.

A videodisc player also can be used for input. LaserDiscs (such as those from Magnavox and Pioneer) are noted for excellent freeze frames. The CED videodisc (from RCA, Sears and others) freezes a single track, which is actually four frames. If you choose a scene with little or no movement, you can get a sharp, steady image.

Using a VCR or videodisc player as a source of digitized images will expand your creative horizons to include the world of entertainment. Lighting, subject matter and composition have been handled by Hollywood's best, and your only criterion for success is a sharp, frozen frame.

How about digitizing Ann-Margaret as she appeared in *Bye-Bye Birdie*? Or the drawn and determined face of Gary Cooper in *High Noon*? Although a one-time personal use of such images probably is permitted by law, you should check into possible copyright infringement before selling or distributing anything displaying such images.

Another common source of a composite video signal may surprise you. If you're a member of a two-computer family, you might consider your other computer as a source of signals to be sent to your C-64 by way of the VA system. As with a VCR, the picture must be still. When I tried using the Amiga computer as the source, however, I was unable to reduce the brightness enough to produce a detailed image.

I tested three VA systems for this article: Eye-Scan, ComputerEyes and Video Digitizer. All three systems consist of capture software and a hardware box that fits into the user port (not the game port) of your C-64.

Software

Eye-Scan has a single disk that acquires images and allows you to store them on disk in formats compatible with Doodle!, KoalaPad and Blazing Paddles. In addition, you can print directly from the disk or use the "slide show" feature to retrieve digitized images from your data disk and display them on the monitor.

The ComputerEyes software allows you to save an image to disk in a neutral format (you can store images as "packed" or "unpacked," with the packed version resulting in a smaller file). These images can be uploaded, downloaded or loaded into the Screen Magic section of Print Shop.

To use other graphics software, you must capture an image with an accessory program dedicated to a particular graphics program. Accessory programs currently available work with Print Shop, Doodle!, Newsroom and FlexiDraw. They are capable of performing the complete acquisition routine.

Video Digitizer has a single disk that lets you save images in standard format as well as in formats for Doodle!, Print Shop, KoalaPad and Newsroom. In addition, Video Digitizer lets you add color to a digitized image, although it might take some practice to color an image so it doesn't look surrealistic.

Hardware

The VA boxes for Eye-Scan and ComputerEyes each have two knobs, one to adjust signal synchronization and another to adjust brightness. The socket into which you plug your video source (whether it's a camera, VCR or videodisc player) is compatible with an RCA phono plug, the most common plug for composite video signals.

The Video Digitizer box is a bit different. It doesn't have a synchronization knob, but it does have a knob to adjust contrast.

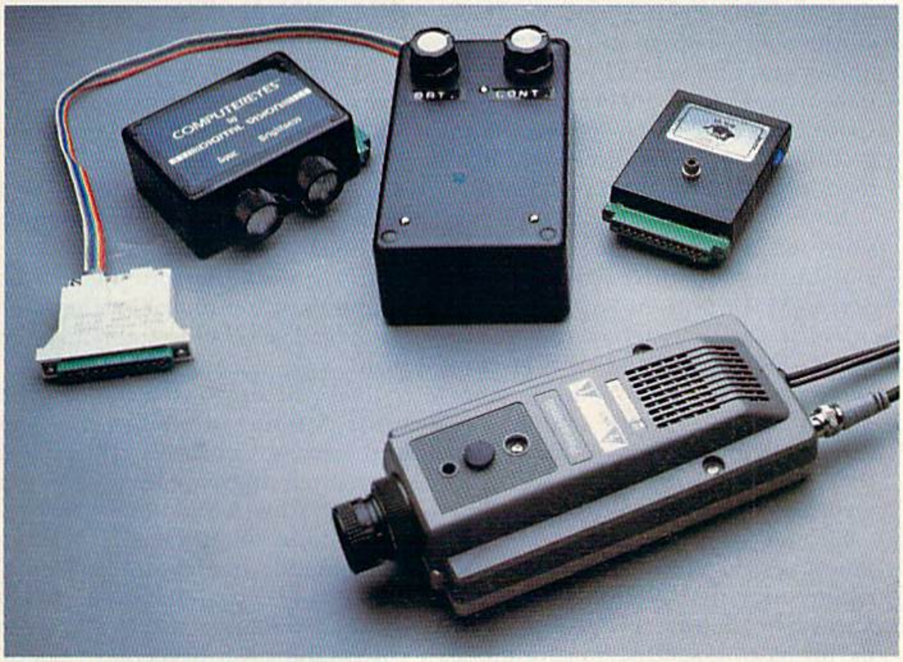
Ease of Use

Although the form and function of the Eye-Scan and ComputerEyes menus are different, these two digitizers accomplish their aims in the same way. All functions are selected from the menu, and if you're familiar with one of the digitizers, you'll have no trouble operating the other.

Eye-Scan uses drop-down menus, much like those on an Amiga or GEOS, but more time-consuming, because you must abort one menu before pulling down the next. All the commands are invoked by the cursor-control and return keys.

Overall, ComputerEyes is the easiest digitizer to use. Its menu, which contains all the options available, is onscreen at all times, and selecting an option is merely a matter of pressing a single alphabetic or numeric key.

Video Digitizer is again a bit different, using a menu similar to that of ComputerEyes, but flipping to a second menu if you wish to add color to the image. Because the program is fast and lets you do your test scans at any video level (described below), Video Digitizer is the easiest to use in terms of arriving at a final image. Unfortunately, because you must assemble the



Video Digitizer, Eye-Scan, ComputerEyes and the camera.

VA box yourself, it appeals mostly to advanced users and tinkerers.

Setting Up the Digitizer

Before doing anything else, select the synchronization item from the menu and use the knob on the VA box to adjust it. (The Video Digitizer has automatic synchronization.) This ensures that your source and acquisition devices are not working at cross-purposes.

Next, adjust the image brightness. This is the most important step in the procedure, as well as the one most open to experimentation. Because it's an internal adjustment, having nothing to do with the brightness of your subject, you must adjust the brightness for all images, no matter what the source.

Brightness is the main determinant of your final product's appearance. Too much brightness will "burn out" some of the details, while too little will result in a digitized image composed solely of black pixels. Fortunately, all three programs allow for unlimited trial captures, allowing you to study many images before committing any to disk or to the printer.

During the brightness-adjustment phase, the image is presented in black and white (no gray scales). Your computer scans the subject about once every six seconds. Some "bleeding" of the image will occur, but this won't appear in the final form.

If you're using a video camera, you also make your focus adjustments at this time. If you're using a live subject, obtain a gray scale card (available at most photography stores) or a video color scale card to help avoid subject fatigue. The latter might be difficult to find unless you have a local supplier of professional video equipment.

Place the card where the subject will be positioned, and use it for focus and brightness adjustments. After each change in brightness, invoke the capture routine you'll be using. When the scans are complete, the digitized image will appear on your screen and stay there until you reject it, giving you ample time to decide whether more or less brightness is required.

Method of Capture

Capture routines consist of levels, probably best thought of as shades of gray. The image source is scanned, and the light and dark values are converted to bits (pixels) that are either on or off. White consists totally of bits that are on; light gray has many on bits; dark gray has fewer; and for black all bits are off.

Eye-Scan and ComputerEyes offer three methods of capture:

Normal—The image is black and white only; a single scan requires six seconds.
Level 4—Four scans result in an image with four density levels.
Level 8—Eight scans result in an image with eight density levels.

ComputerEyes offers some additional options on accessory disks. For the Doodle! format, the C-64 gray scale is used in the Low- and High-Contrast modes. The Low-Contrast mode uses four adjacent video levels, while High-Contrast makes eight scans and then uses four alternating levels to produce a greater separation between shades of gray. Although Doodle! can't print these two forms of capture, you can use them to produce an image closer to photographic quality. You can color or enhance the image, then resave it to disk.

With the Print Shop accessory disk, images must be converted to a graphics format. Alternatively, they can be captured in a direct graphics mode that scans quickly and produces an image in three shades: black, gray and white. Print Shop graphics images don't use the entire screen. A gray rectangle sets off the portion of the screen that will be stored and used.

You can alter images captured in this way with Print Shop's graphics editor and use them in place of the library graphics. Normally, a digitized image requires 37 blocks of storage space on a disk. Because Print Shop graphics images require less information, only three blocks are used.

Note that "standard" captures and saves made with all three programs can be loaded into Print Shop's Screen Magic option.

Video Digitizer allows capture in density levels 2 to 8 and every level in between. It's also fast. While the other programs require six seconds per scan (and one scan for every gray level chosen), Video Digitizer can produce an eight-level scan in just three seconds.

Further, while Eye-Scan and ComputerEyes do their brightness scanning only in the Normal (black-and-white) mode, Video Digitizer performs this routine in any mode you select, telling you instantly what your final result will be.

Although contrast is barely mentioned in the documentation, it's the second most important element in capturing usable images. Because your final product is composed of dot patterns of varying density, low contrast results in a more uniform density—eyes, hair and skin of almost the same shade of gray—making it difficult to distinguish all the different elements.

In video, contrast is the product of light, but I hasten to add that it has nothing to do with the brightness control on the VA hardware. Adding light heightens contrast, and the final result, all other things being equal, should be about 50 percent better. Video Digitizer does have a contrast knob on its VA box, but this is no substitute for light.

Using a video or photo lamp, you'll get your best results by skimming only the edge of the light beam across the subject—a technique photographers sometimes call feathering. This reduces the extra illumination so it won't overpower the camera.

The images generated by a color video camera have more contrast. This is because color cameras are traditionally not as sharp as black-and-white cameras, and most manufacturers make up for this by boosting the contrast.

For my tests, I used the black-and-white video camera marketed by ComputerEyes, along with a "low-light" color video camera with a Newvicon tube. Because of the inherent contrast in color cameras, results were better (probably about 25 percent) with the color camera I used, but both cameras worked better when I used a photolamp.

Daylight is a good alternative to conventional artificial light, although circumstances didn't allow me to test this. If you station your subject near a window on a sunny or bright, cloudy day, you'll get a better final image and print.

If you already own a color camera, use it. Rushing out to buy the "latest and greatest" probably will offer no substantial improvement, and purchasing a black-and-white camera as an addition will not help. If you have no camera, your choice will be between a less expensive black-and-white surveillance camera and a more costly (and contrasty) color camera.

Most color cameras today have elec-

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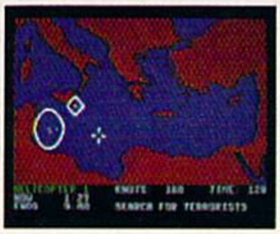

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tronic viewfinders that make focusing and composition much easier. Surveillance cameras require no viewfinder. This results in a lower price, but you'll have to focus and compose by trial and error during the test scans.

What To Capture

Whether you're capturing images of live or static subjects, your camera must be on a tripod. A camera that moves even a little during the scanning process will produce a badly distorted image.

A VCR or videodisc player will hold a freeze frame long enough for the highest-level scan. Most VCRs can safely freeze a frame for five minutes. Even so, that might not be long enough for multiple trials, so it's helpful to have a monitor into which you can plug your VCR in case you need to reset the frame.

If you must work with live subjects, do all your brightness tests on a static object such as a test card or a copy of *RUN*. Once you've established the proper levels, replace the card with your subject—changing nothing else—and if you're lucky, you'll get your image in one pass.

Two caveats are necessary when you're capturing photos. First, prolonged exposure to a photolamp's heat can damage a photograph or cause it to begin curling. Use a copy of *RUN* to get in the brightness ballpark, then tape the photograph to whatever you're using for an easel.

The second caveat concerns the vagaries of Doodle!. This program introduces some proportional distortion in the printed image. If you choose the standard print, the distortion is high. You can control distortion on a double-size print by capturing the image sideways. Either turn a vertical print on its side or turn the video camera 90 degrees off-axis. Not only will this produce a less distorted print, but it also will allow you to include more of the photo in your image because both the photo and your monitor will be horizontally oriented.

Think big in deciding what to capture. Since none of the VA systems is capable of reproducing detail, your best results will come from what photographers call a strong subject: A face is better than the entire body, and a can of beer is better than a six-pack. Large, simple images work well; small, detailed images do not.

What Do I Do with It?

Print it on a T-shirt, of course!

Actually, that's not as facetious as it sounds. Diversions, Inc. (1550 Winding Way, Belmont, CA 94002) manufactures special printer ribbons for this purpose. Print your image on standard paper, then iron it onto the fabric. Foto-Wear!, Inc. (62 Herbert Drive, East Brunswick, NJ 08816) takes the opposite approach. It sells a special paper for iron-on transfers that presumably can be used in any printer with a standard ribbon. You'll find that either method is preferable to stuffing your T-shirt into your printer.

Or use one of the graphics programs to modify the image. When using images from Doodle!, I found that I could use all the tools to modify the digitized image—including color. Note that modifying or erasing only the background sometimes enhances an otherwise flat image.

Don't overlook the fact that images printed with Blazing Paddles, KoalaPad or Doodle! can be printed in black and white and then colored by hand. A good eight-level image, with a variety of shadings, can guide you in much the same way a paint-by-number kit does.

Print your next issue of Newsroom using digitized photographs instead of line art, or mix the two styles. Use Print Shop to print your own captured images instead of those in the Print Shop library. QuantumLink users can upload their own digitized photos and biographies and download those posted by other members.

If you print through one of the dedicated graphics programs, the VA systems themselves have no printer support. If your printer works with any of the programs mentioned, that's fine. But if you don't yet own any of these programs, check for compatibility with your printer or printer/interface combination before buying one.

A Final Word

As I mentioned before, installing the three VA systems is easy, requiring only a few minutes. Although setting up each shot takes time, being able to make adjustments is better than having a nonadjustable system that works only half the time or only on some subjects.

Most of the documentation is comprehensible, although there are some holes in it (for instance, documents for Eye-Scan are on the disk, but they can be printed or called up as Help files). Some of the shortcomings are understandable: In a process that involves video, photography and computers, not every situation is predictable. I hope the information I've provided will help solve most of your problems.

Video acquisition and digitizing is here to stay. Both open new avenues for your computer, providing you with opportunities you can enjoy as leisure activities or perhaps turn into money-making ventures.■

Ervin Bobo is a free-lance writer and columnist for the Commodore and Amiga computers, and a former videographer. Address all correspondence to him at 23 St. Lawrence, St. Peters, MO 63376.

The Bottom Line

Eye-Scan comes in a kit containing the VA box and capture software. It costs $89.95 and is available from Digital Engineering, 2718 SW Kelly, Suite C165, Portland, OR 97201.

ComputerEyes also contains the VA box and basic capture software. It costs $129.95. A deluxe kit containing a Panasonic black-and-white video surveillance camera (with a built-in power supply and converter) costs $459. Both ComputerEyes kits are available from Digital Vision, Inc., 14 Oak St., Suite 2, Needham, MA 02192.

Video Digitizer is less expensive than Eye-Scan and ComputerEyes, but you have to assemble the VA box yourself. The kit costs $39.95 and comes with a printed circuit board, schematics, a parts list, and the capture software. Parts necessary to complete the VA box are available at electronics stores for about $25. Video Digitizer is available from Kinney Software, 121 North Hampton Road, Donnelsville, OH 45319.

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DFPRINT

This accessory to Datafile will create mailing labels and reports according to your customized formats.

By MIKE KONSHAK

We continue the updated Datafile series with DFPrint, the first of the two major accessory programs you need to print out Datafile records. Type in DFPrint (Listing 1) and run it. The configuration menu described at the end of this article appears first. Choose among options 1–4 before continuing.

DFPrint will then present these options:

```
DATAFILE FAST PRINT PROGRAM

OPEN RECORD FILE ON DISK
$ DISK DIRECTORY 4
QUIT PROGRAM

TRANSFER TO:
  D DATAFILE
  C DFCALC

PRESS THE APPROPRIATE KEY
```

DFPrint assumes that you'll be printing a record file that was created, edited and written (saved) to disk with Datafile and that the record file is located on the disk in the disk drive. It prints the records in the order in which they were last sorted and saved by Datafile. DFPrint can only read record files, and so cannot make any changes to the records.

Pressing $ or 4 lets you see the disk directory, and Q quits the program altogether. Pressing O invokes a prompt for you to enter the name of the Datafile to be read. Insert the disk containing your records, type in the name of your record file, MEMBERS, and press the return key. The program will read the structure of the file to get information it will use later. After the light on the drive goes out, you'll see the following menu:

```
RECORD PRINTOUT MENU

PRINT OPTION: NO FORMATS
      PRESENT
  UNFORMATTED LIST
  REPORTS FORMAT Formats: RP] *
  MAILING LABELS          : ML] *

CONFIGURE:
  LABELS: 5 ROWS, 34 CHRS,
    1 ACROSS
  PRINTER: OPTION 4, DEVICE# 3
  EXIT TO RESTART

PRESS THE APPROPRIATE KEY
```

This screen lets you choose the type of printout that best suits your needs and reconfigure the printer or change label sizes and type. You can

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also display the disk directory from this menu.

Printing Unformatted Lists

This is by far the easiest printout option, because you don't have to create a format. Records and fields will be printed in much the same way that you might fill out 3-by-5 cards. An unformatted report resembles the following:

```
[ RECORD # 1 ]----------
NAME ...........MIKE
AGE .............39
BIRTHDAY .......05/28

[ RECORD # 2 ]----------
NAME ...........BECKY
AGE .............27
BIRTHDAY .......06/27

[ RECORD # 3 ]----------
NAME ...........SARAH
AGE .............11
BIRTHDAY .......09/10
```

The name of each field is printed along with the field data and record number. The program will automatically skip over the perforations by calculating how many complete records will fit onto one page. The dashed line is printed across the entire page as a guide for cutting the paper in case you wish to attach the record data to a card. This type of printout uses a considerable amount of paper, so it's best to define a report format for printing large files.

If your field lengths exceed 60 characters, you'll have to put your printer into a compressed mode. This prevents the record data from wrapping around to the next line, which would throw off the pagination count.

Selecting Records

After you've chosen the Unformatted List option or entered a print format into the computer from the disk, the disk drive light will turn on as the drive positions itself at the start of your record file. Then, using the following screen, select which records to print out:

```
PRINT OPTIONS MENU

THERE ARE 22 RECORDS IN
  MEMBERS

ALL RECORDS IN FILE
  FIND RECORDS WITH COMMON
    FIELDS
EXIT BACK TO START

PRESS THE APPROPRIATE KEY
```

Pressing A prints the entire file using the current format. You'll first be asked the starting record number. Record 1 is the default starting position.

Pressing F invokes a routine that searches for records according to your entered data. After choosing the field to be searched, enter the data to which the records will be compared. If the beginning of the record field matches your data, the record will be printed out.

Pressing the return key during printing stops the process after a record is completed. You can continue printing or exit the routine, as prompted.

Print-Format Options Menu

Whenever you choose M for mailing labels or R for reports at the record-printout menu, you'll be confronted with the following screen:

```
PRINT OPTIONS MENU

CURRENT RECORD FILE: MEMBERS
CURRENT FORMAT FILE:
  LOAD OLD FORMAT
  CREATE/CHANGE FORMAT
  SAVE CURRENT FORMAT
  PRINT RECORDS
  DIRECTORY $
  EXIT

PRESS THE APPROPRIATE KEY
```

If you're accessing this routine for the first time and no print format is present, then two of the options, Print and Save, will not be displayed. If you have a format on the disk, then you can load it by first pressing L and then entering the format filename as prompted.

If you've never created a print format for the type of printout you want, or if you desire to change one that's already loaded, you must press C to enter the respective format-definition routines. Creating formats will be discussed in subsequent sections.

Once a print format is present in memory, pressing P will advance you to the Print Options menu, which selects records for printing. This menu was discussed above.

Mailing-Label Formats

Before records from your file can be printed out on labels, you must define a label format specifically for your file. Formats tell the computer which of your record fields to print in each row of the label. Besides the actual data that's to be printed, you must define the size of your label.

The size of a label is specified by the number of rows and the number of characters in each row. Datafile defaults to a standard label size, which measures $^{15}/_{16}$ of an inch wide and 3 inches long. This popular label size can be printed with 5 rows and 34 characters.

There are various sizes and types of labels available. By types, I mean the number of labels across a page, sometimes referred to as one up, two up, and so forth. Datafile will print up to 30 rows and 136 characters per row on labels up to four across a page (four up). You should be able to design a format around any size or type of label. I prefer one-up labels, but some printers don't have adjustable tractors, in which case you must print the labels two (or more) up.

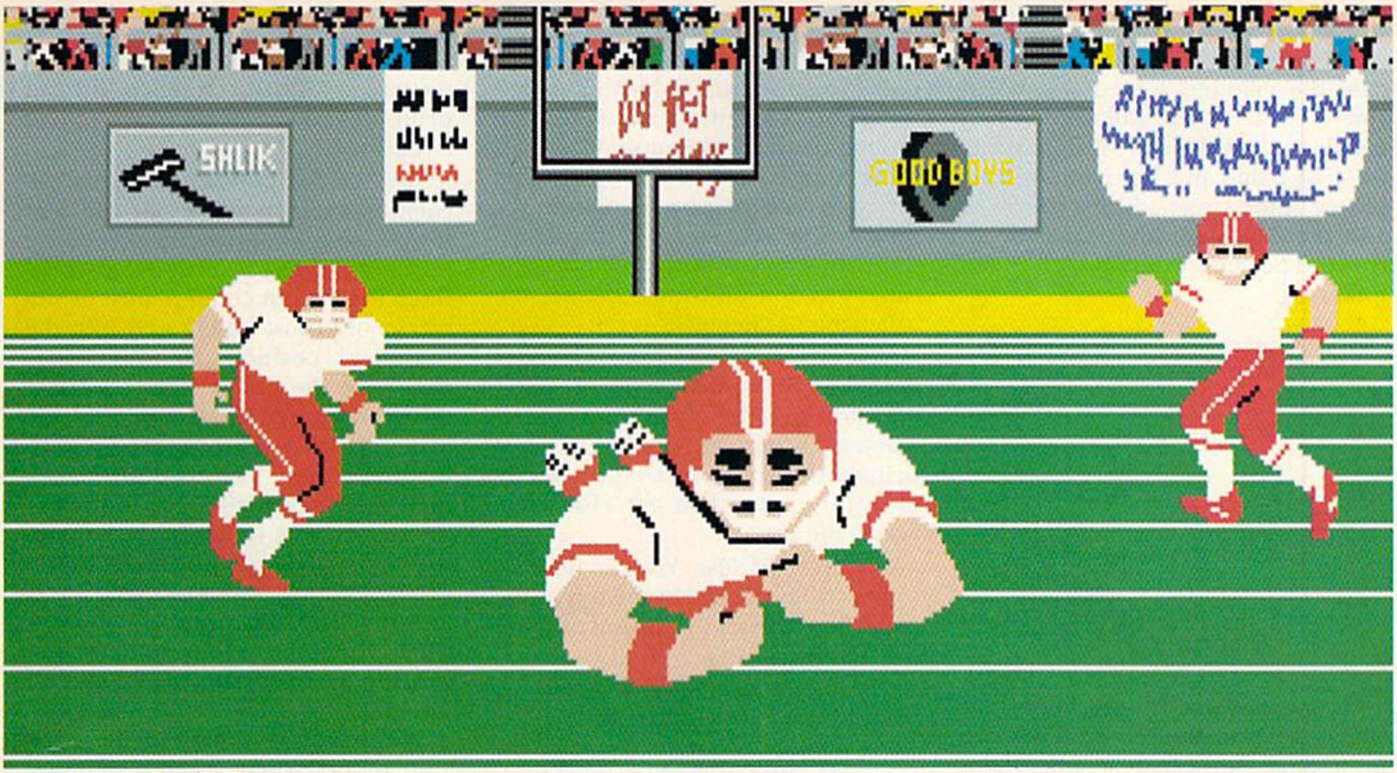
After defining the number of rows, you'll be asked which fields you want printed in each row. Up to three record fields may be printed in each row and in any order. You'll be required to enter at least one record-field number for the first field in each row that will print data. If you want to skip a row (print a blank line), you must enter a zero in all three fields for that row.

When asked for fields 1–3 in each row, enter the record-field number behind the prompt. A zero will be preprinted for you the first time. If you only want one record-field in a row, enter the desired record-field number for field 1 and zeros for fields 2 and 3.

For example, let's use the address record file called MEMBERS for creating a label format. MEMBERS is a good candidate, since it needs to combine multiple fields in several rows. MEMBERS has the following structure:

Field	Title	Length
1	LAST NAME	15
2	FIRST NAME	15
3	STREET ADD	30
4	CITY ST	22
5	ZIP	7
6	PHONE	12
7	DATE JOINED	8

Knowing the record file structure,



Amiga screen

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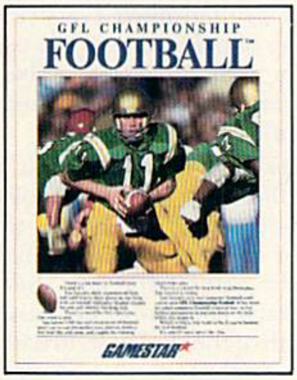

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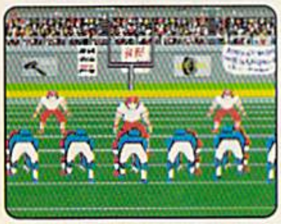
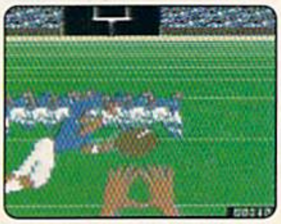
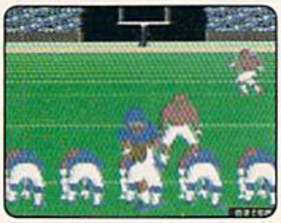


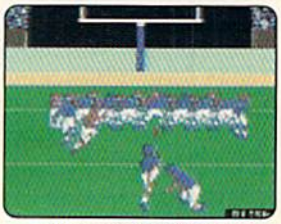
Amiga screen



Commodore 64-128 screen



Commodore 64-128 screen



Commodore 64-128 screen

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Circle 5 on Reader Service card.

we'll create a label with five rows. The date the member joined will be in row 1, so he or she will know when it's time to pay dues. We'll skip row 2, the first name and last name will be in row 3, the street address in row 4, and the city, state and Zip code in row 5. The rows would look like the following:

Row	Field1	Field2	Field3	Will print
1	7	0	0	DATE JOINED
2	0	0	0	
3	2	1	0	FIRST & LAST NAME
4	3	0	0	STREET ADDRESS
5	4	5	0	CITY ST & ZIP

As you can see, it's not important which position the record fields are in, because you can rearrange them when you create the label format. Again, let me remind you that the default label size is 5 rows, 34 characters long and one up. If you're using a different size or type of label, you must alter the label configuration by pressing L at the print-options menu.

Label formats are handy if you wish to review all your records on the screen. Use printer option 4 and one of the multiple-up options, and change the number of characters to get as many records as possible across the screen.

When you finish defining your label format, you'll have an opportunity to review and change the format. If you press N, you'll be asked if you want to save the label format. You should do so immediately, lest you forget it later. Press Y and you'll be prompted with the current record filename. Either press the return key to accept the filename as is, or make the appropriate changes. Use no more than 12 characters for your label-format filename. A label format with the same name will be scratched and replaced with the new format file. Label format files appear on the disk in the form ML] MEMBERS.

Creating Report Formats

Just like labels, a report format must be designed around your record file if you wish to print the data in an organized and well-presented columnar report. Reports differ from labels in that the record-field data is printed in columns instead of rows. This report-format routine is recommended for reports containing mostly text, although the last column may be used for totaling numbers. Use the DFCalc program (appearing next month) for reports that require a lot of calculations. In every report, you have the capability for, and must define, the following parameters:

Width in characters. Up to 136 characters can be printed across the page, depending on the capabilities of your printer. You might have to put your printer into a compressed print mode to print more than 80 characters across the page.

Number of title lines. You can have up to four titles printed at the top of the page. The titles will appear only on the first page.

The title for each title line. Titles can be as long as the width of the report. They may not contain commas, colons or semicolons. Examples of titles are: company name, date, report information and sources.

Number of columns. You can have up to 16 columns, at least one of which must be printed.

Header for each column. Headers identify the contents of the column and may be any name you choose. They are printed above every column at the top of every page. They cannot be wider than their respective columns, nor can they contain commas, colons or semicolons.

Position of each column. You must specify the starting location of each column—a number from 1 to the width of the report. You'll have to determine beforehand how wide you expect each column to be, based on the length of the record-field data that will be printed in the column. In doing your calculations, keep in mind that the columns will be separated by two spaces. You may have to go back and adjust the width of the report and the position of the columns after you see your first printout. A sheet of graph paper comes in handy here.

Contents of each column. Up to three record fields can be printed in each column. The fields within a column will be separated by one space, and the entire contents of the column will be printed left-justified. At least one record field must be chosen for each column and entered in the first field position. As in formatting labels, enter zeros for any unused fields. The record-field titles will be printed on the screen for easy reference. You can print only one record in each row of a report.

Total the last column? The only calculation the report format will perform is summing the contents of the last column. The record-field data defined for the last column must be numeric and must be entered into the first field position. If nonnumeric data (like the dollar sign) occurs at the beginning of the record field, the program will produce a result of zero for that record. The total of the column will be printed at the bottom of the report. The values in the column will be printed right-justified with two decimal places, such as 125.50. To select the Totaling option, choose 1 when prompted at the end of the formatting process. Entering 0 turns off totaling.

When you're finished defining your report, you're asked if you want to go back and review or change the format parameters. If you respond with N, you're asked if you want to save the format. If you've made any changes at all to an existing format, or have created a new format, press Y at this time. Use the preprinted filename or type in a new name. Use a maximum of 12 characters in the name of the report-format file. If a file with the same name already resides on the disk, that file will be scratched, to be replaced by the new one.

Using the file MEMBERS as an example, you might create a report format using the following parameters:

REPORT FORMAT FILE: MEMBERS
(appears on the disk as RP] MEMBERS)
NUMBER OF CHARACTERS (wide): 80
NUMBER OF TITLE LINES: 2
TITLE 1: CLUB MEMBER ADDRESS LIST
TITLE 2: MAY 31 1985
NUMBER OF COLUMNS: 5
CLM 1: POSITION = 1 HEADER =
FIRST/LAST NAME FIELDS = 2 1 0
CLM 2: POSITION = 19 HEADER =
STREET ADDRESS
FIELDS = 3 0 0
CLM 3: POSITION = 41 HEADER =
CITY AND STATE FIELDS = 4 5 0
CLM 4: POSITION = 60 HEADER =
PHONE NUMBER FIELDS = 6 0 0
CLM 5: POSITION = 74 HEADER =
JOINED FIELDS = 7 0 0
TOTAL LAST CLM: 0

Enter the above values after the respective prompts. You'll notice that after you've entered a value, it will be preprinted for you when you go back to review the format parameters.

Printer Interface Configuration

Because there are so many printers that will attach to the C-64 computer, Datafile can be configured to your special system. Upon accessing DFPrint or DFCalc you'll be given a choice of four print configurations. The option display will appear as follows:

```
PRINTER-INTERFACE CONFIGURATION

CURRENT OPTION IS 4
PRESS 1 CARDCO A, C = 1525
      2 PRINTERS W/GRAPHIC
        INTERFACES
      3 C = 1526, C = MPS801/802/803
      4 PRINT OUTPUT TO SCREEN
        OR SEND PRINTER COMMANDS
      EXIT TO CONTINUE

PRESS THE APPROPRIATE KEY
```

Options 1–4 are for choosing the configuration. The current option will change each time you press one of these numbers. After selecting one (such as 4, for printing to the screen), you can choose to send commands to your printer or exit this menu into the next part of the program.

Sending Printer Codes

Pressing S from the printer-interface configuration menu will deliver you to a routine for sending ASCII codes to set up your printer for various print modes and styles. Most Commodore printers don't offer much flexibility with compressed print and various type fonts.

You'll have to check your printer manual for the codes you can send. Look for statements that print numbers within CHR$( ) commands, such as PRINT#4,CHR$(15), which makes a Commodore printer print all double-wide or enhanced characters, or PRINT#4,CHR$(27)CHR$(66) CHR$(2), which invokes a compressed print mode (12 characters per inch) on Star printers. Commands that look like PRINT#4,ESC "W"1 must be converted to their ASCII equivalents, such as PRINT#4,CHR$(27)CHR$(87) CHR$(1).

When you're sending printer command codes, enter only the numbers within the parentheses, such as 27, 66 and 2. Enter the numbers one at a time, following each number with a return. You may send one to four numbers, then terminate the sequence with an asterisk (*). Your printer will probably do a linefeed at this point, indicating it has received something.

You can test your change by pressing T at the end of the routine, and you can also choose to send another code by pressing A. E will return you to where you left off in the particular program you're in.

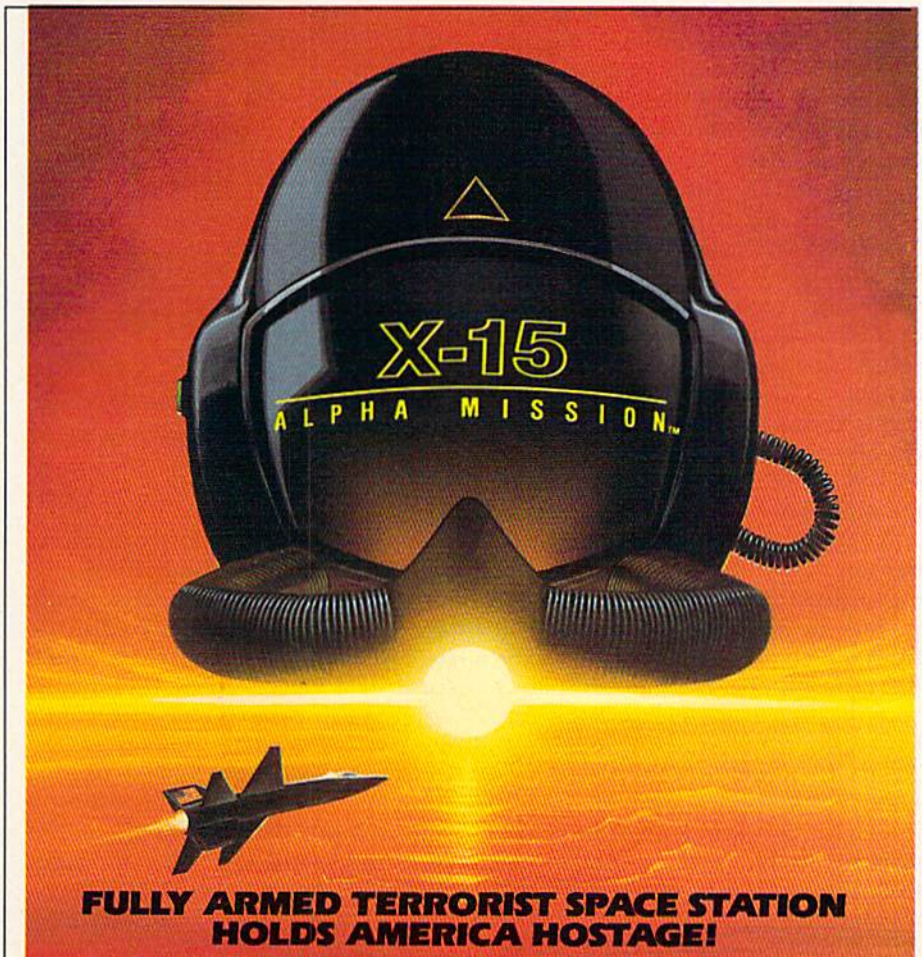
Next month, we'll present DFCalc, Datafile's second accessory program. Ⓡ

Address all author correspondence to Mike Konshak, 4821 Harvest Court, Colorado Springs, CO 80917.

Listing 1. *DFPrint program.*

```
10 IFFL=0THENFL=1:LOAD"DP] DOS5.
   1",8,1                  :REM*150
11 IFFL=1THENFL=2:SYS52224:REM(C
   )COMMODORE              :REM*155
600 FORE=0TO24:POKE54272+E,0:NEX
    T:POKE54296,15:GOTO1500
                           :REM*156
602 POKE54277,58:POKE54278,16:PO
    KE54273,35:POKE54272,134
                           :REM*246
```

Continued on p. 84.



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Circle 49 on Reader Service card.

PICK YOUR PS AND QS

If you're a student or just enjoy words, you can improve your vocabulary with this easy-to-play game.

By PENNY DeGROFF

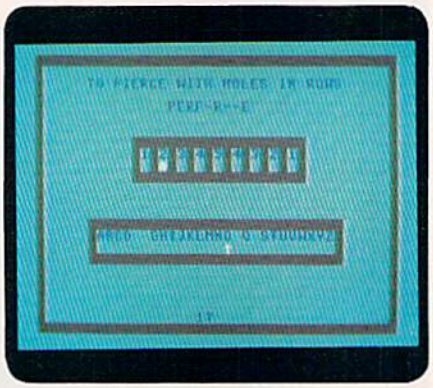
Pick Your Ps and Qs is a game written for young students wishing to expand their vocabulary or for anyone who enjoys a word-game challenge.

The program contains ten words and their definitions. When it's booted up, the computer chooses, at random, one word and its definition. The definition is printed near the top of the screen, and below it appears a series of dashes, one for each letter in the word. Two boxes appear in the center of the screen, one (the upper) containing the numbers 1, 2, 3, 4, 5, 4, 3, 2, 1 and the other the letters of the alphabet.

A solid ball moves from one number to another in the upper box. Using a joystick in port 2, the player presses the fire-button to stop the ball from moving. The number above the ball is the number of points the player receives if he or she picks a letter that belongs in the word.

An arrow then appears in the lower box. Using the joystick, the player moves the arrow to a letter he or she thinks is in the word and presses the fire-button. If that letter *is* in the word, it replaces one or more of the dashes, and the player's score, shown at the bottom of the screen, increases. If the player picks an incorrect letter, a buzzer sounds.

Play is continued until the entire word is revealed. If the player can guess the word without picking an incorrect letter, he or she receives a ten-point bonus, signified by a flashing border. The game is over when all ten words have been played. At that point the player's final score, along with the high score, is displayed.



Sample screen display from Pick Your Ps and Qs game program.

You'll probably want to change the words from time to time. To do this, list lines 710 to 800. Each line, in the form of a Data statement, contains one word, a comma and that word's definition. Move the cursor to the word to be changed and type in your replacement word, followed by a comma and the definition. Be sure to press the return key after you make the change. (Of course, if you're playing the game, you'll want to have someone else set it up for you.)

One word of caution: Don't place a comma within a definition. If you must separate the words in a definition, use a hyphen or a semicolon. Also, to keep the screen formatted properly, a definition should not contain more than 36 letters and spaces.

For a change of pace, you might set the game up to have the player find antonyms (words with opposite meanings) or synonyms (words with similar meanings). R

RUN It Right

C-64

Address all author correspondence to Penny DeGroff, Route 2, Box 2605, Garfield, AR 72732.

Listing 1. *Pick Your Ps and Qs program.*

```
10 DIMD$(24):D$(0)=CHR$(19):FORX
   =1TO24:D$(X)=D$(X-1)+CHR$(17)
   :NEXT                  :REM*80
20 FORX=54272TO54295:POKEX,0:NEX
   T:POKE54296,15        :REM*240
30 PRINTCHR$(147):POKE53280,6:PO
   KE53281,6:POKE646,1    :REM*36
40 PRINTD$(6)TAB(5)"PPPP IIII CC
   CC K{2 SPACEs}K{6 SPACEs}AAAA
   "                     :REM*100
50 PRINTTAB(5)"P{2 SPACEs}P{3 SP
   ACEs}I{2 SPACEs}C{4 SPACEs}K
   K{7 SPACEs}A{2 SPACEs}A"
                          :REM*86
60 PRINTTAB(5)"PPPP{3 SPACEs}I{2
    SPACEs}C{4 SPACEs}KK{8 SPACE
   s}AAAA"                :REM*34
70 PRINTTAB(5)"P{6 SPACEs}I{2 SP
   ACEs}C{4 SPACEs}K K{7 SPACEs}
   A{2 SPACEs}A"         :REM*168
80 PRINTTAB(5)"P{4 SPACEs}IIII C
   CCC K{2 SPACEs}K{6 SPACEs}A{2
    SPACEs}A"              :REM*0
90 PRINTD$(15)TAB(5)"L{4 SPACEs}
   EEEE TTTT TTTT EEEE RRRR"
                          :REM*16
100 PRINTTAB(5)"L{4 SPACEs}E{6 S
    PACEs}T{4 SPACEs}T{2 SPACEs}
    E{4 SPACEs}R{2 SPACEs}R"
                          :REM*36
110 PRINTTAB(5)"L{4 SPACEs}EEE{4
     SPACEs}T{4 SPACEs}T{2 SPACE
    s}EEE{2 SPACEs}RRRR" :REM*64
120 PRINTTAB(5)"L{4 SPACEs}E{6 S
    PACEs}T{4 SPACEs}T{2 SPACEs}
    E{4 SPACEs}R R"       :REM*96
130 PRINTTAB(5)"LLLL EEEE{3 SPAC
    Es}T{4 SPACEs}T{2 SPACEs}EEE
    E R{2 SPACEs}R"       :REM*56
140 FORX=1064TO1103:POKEX,90:POK
    EX+54272,1:NEXT       :REM*44
```

→

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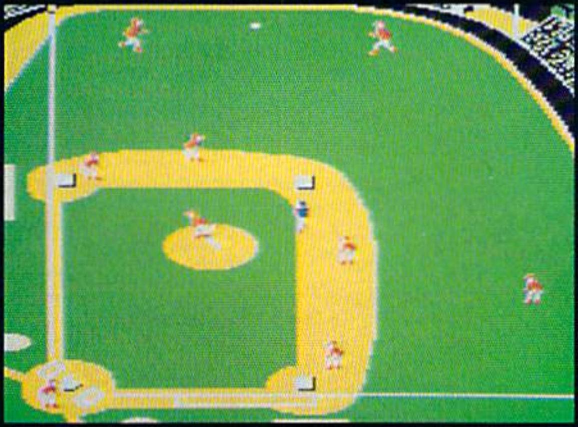

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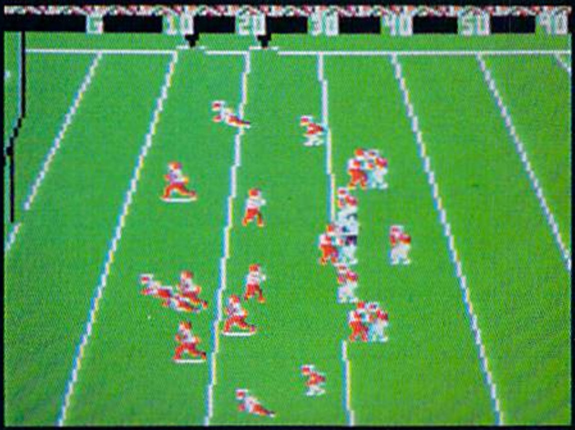
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Listing 1 continued.

```
150 FORX=1143TO2023STEP40:POKEX,
    90:POKEX+54272,1:NEXT:REM*92
160 FORX=2022TO1984STEP-1:POKEX,
    90:POKEX+54272,1:NEXT
                        :REM*198
170 FORX=1944TO1104STEP-40:POKEX
    ,90:POKEX+54272,1:NEXT
                        :REM*216
180 FORX=1TO5:POKE53280,2:POKE53
    281,2:FORDE=1TO200:NEXT
                        :REM*120
190 POKE53280,6:POKE53281,6:FORD
    E=1TO200:NEXT:NEXT:FORDE=1TO
    500:NEXT             :REM*10
200 PA$="PRESS FIRE BUTTON TO PL
    AY AGAIN"           :REM*176
210 FORX=1TO10:READAN$(X),CL$(X)
    :NEXT:PP(1)=1436:FORX=2TO9:P
    P(X)=PP(X-1)+2:NEXT  :REM*50
220 FORX=1TO10:AN(X)=0:NEXT:LE=0
    :SC=0:POKE53280,3:POKE53281,
    3                    :REM*14
230 PRINTCHR$(147):LE=LE+1:IFLE=
    11THEN640            :REM*94
240 F2=0:FORX=1064TO1103:POKEX,1
    60:POKEX+54272,2:NEXT
                        :REM*122
250 FORX=1143TO2023STEP40:POKEX,
    160:POKEX+54272,2:NEXT
                         :REM*18
260 FORX=2022TO1984STEP-1:POKEX,
    160:POKEX+54272,2:NEXT
                        :REM*125
270 FORX=1944TO1104STEP-40:POKEX
    ,160:POKEX+54272,2:NEXT
                        :REM*225
280 FORX=1355TO1373:POKEX,160:PO
    KEX+54272,2:NEXT:FORX=1395TO
    1413STEP2           :REM*119
290 POKEX,160:POKEX+54272,2:NEXT
    :FORX=1435TO1453STEP2:POKEX,
    160:POKEX+54272,2   :REM*127
300 NEXT:FORX=1475TO1493:POKEX,1
    60:POKEX+54272,2:NEXT:REM*91
310 FORX=1TO9:POKEPP(X)+54272,1:
    NEXT:FORX=1630TO1657:POKEX,1
    60:POKEX+54272,2     :REM*61
320 NEXT:POKE1670,160:POKE1670+5
    4272,2:POKE1697,160:POKE1697
    +54272,2             :REM*87
330 POKE1710,160:POKE1710+54272,
    2:POKE1737,160:POKE1737+5427
    2,2                  :REM*51
340 FORX=1750TO1777:POKEX,160:PO
    KEX+54272,2:NEXT:FORX=1711TO
    1736                :REM*109
350 POKEX+54272,1:NEXT:POKE646,6
    :PRINTD$(9)TAB(12)"1{CRSR RT
    }2{CRSR RT}3{CRSR RT}4{CRSR
    RT}5{CRSR RT}4{CRSR RT}3{CRS
    R RT}2{CRSR RT}1"   :REM*173
360 PRINTD$(16)TAB(7)"ABCDEFGHIJ
    KLMNOPQRSTUVWXYZ":PRINTD$(23
    )TAB(17)SC          :REM*197
370 RN=INT(RND(1)*10)+1:IFAN(RN)
    =1THEN370           :REM*131
380 AN(RN)=1:Y=LEN(AN$(RN)):Z=LE
    N(CL$(RN)):T$="":FORX=1TOY:T
    $=T$+"-":NEXT       :REM*189
390 PRINTD$(3)TAB((40-Z)/2)CL$(R
    N):PRINTD$(5)TAB((40-Y)/2)T$
                        :REM*175
400 N=INT(RND(1)*9)+1:POKEPP(N),
    81:FORDE=1TO100:NEXT:REM*103
410 FB=-((PEEK(56320)AND16)=0):I
    FFB=0THENPOKEPP(N),32:GOTO40
    0                   :REM*239
420 FB=-((PEEK(56320)AND16)=0):I
    FFB=1THEN420         :REM*41
430 AP=1711:POKEAP,30:F1=0:LV=PE
    EK(PP(N)-40)-48      :REM*19
440 FORDE=1TO100:NEXT:FB=-((PEEK
    (56320)AND16)=0):IFFB=1THEN5
    00                  :REM*171
450 JS=PEEK(56320)AND15:IFJS=11T
    HENDI=-1:GOTO480    :REM*249
460 IFJS=7THENDI=1:GOTO480
                        :REM*213
470 GOTO440             :REM*233
480 IFPEEK(AP+DI)=160THEN440
                         :REM*95
490 POKEAP,32:AP=AP+DI:POKEAP,30
    :GOTO440            :REM*157
500 IFPEEK(AP-40)=32THEN440
                        :REM*173
510 L$=CHR$(PEEK(AP-40)+64):FORX
    =1TOY:IFL$<>MID$(AN$(RN),X,1
    )THEN550            :REM*105
520 F1=1:T$=LEFT$(T$,X-1)+L$+MID
    $(T$,X+1):PRINTD$(5)TAB((40-
    Y)/2)T$:SC=SC+LV      :REM*4
530 PRINTD$(23)TAB(17)SC:POKE542
    77,15:POKE54272,70:POKE54273
    ,100:POKE54276,33   :REM*138
540 FORDE=1TO75:NEXT:POKE54276,3
    2:IFT$=AN$(RN)THEN570:REM*64
550 NEXT:IFF1=1THEN570   :REM*62
560 F2=1:POKE54277,45:POKE54272,
    20:POKE54273,5:POKE54276,33:
    FORDE=1TO150:NEXT   :REM*114
570 POKE54276,32:POKEAP,32:POKEA
    P-40,32:POKEPP(N),32:IFT$<>A
    N$(RN)THEN400       :REM*120
580 IFF2=1THEN610       :REM*152
590 SC=SC+10:PRINTD$(23)TAB(17)S
    C:FORQ=1TO2:POKE53280,14:FOR
    DE=1TO100:NEXT      :REM*178
600 POKE53280,13:FORDE=1TO100:NE
    XT:POKE53280,3:FORDE=1TO100:
    NEXT:NEXT           :REM*228
610 PRINTD$(24)TAB(11)"PRESS FIR
    E BUTTON";:FORDE=1TO50:NEXT
                        :REM*210
620 FB=-((PEEK(56320)AND16)=0):I
    FFB=1THEN230        :REM*240
630 PRINTD$(24)TAB(11)"{17 SPACE
    s}";:FORDE=1TO50:NEXT:GOTO61
    0                   :REM*124
640 FORDE=1TO1000:NEXT:PRINTCHR$
    (147):POKE53280,9:POKE53281,
    8:POKE646,7         :REM*112
650 PRINTD$(9)TAB(15)"GAME OVER"
    :PRINTD$(12)TAB(12)"FINAL SC
    ORE:"SC              :REM*12
660 IFSC>HSTHENHS=SC     :REM*62
670 PRINTTAB(13)"HIGH SCORE:"HS
                        :REM*220
680 PRINTD$(16)TAB(4)PA$:FORDE=1
    TO50:NEXT:POKE646,1:PRINTD$(
    16)TAB(4)PA$        :REM*156
690 FORDE=1TO50:NEXT:FB=-((PEEK(
    56320)AND16)=0):IFFB=1THEN22
    0                    :REM*76
700 POKE646,7:GOTO680   :REM*108
710 DATA LAUDABLE,PRAISEWORTHY
                         :REM*98
720 DATA PERFORATE,TO PIERCE WIT
    H HOLES IN ROWS      :REM*92
730 DATA VISCID,STICKY OR ADHESI
    VE                  :REM*180
740 DATA PENURIOUS,STINGY:REM*20
750 DATA RIDICULOUS,ABSURD
                         :REM*14
760 DATA DISTRAUGHT,WORRIED
                        :REM*136
770 DATA PROBE,INVESTIGATE OR EX
    AMINE               :REM*195
780 DATA TAUT,TIGHT      :REM*53
790 DATA HAZARDOUS,DANGEROUS
                         :REM*45
800 DATA TOLERATE,ENDURE:REM*229
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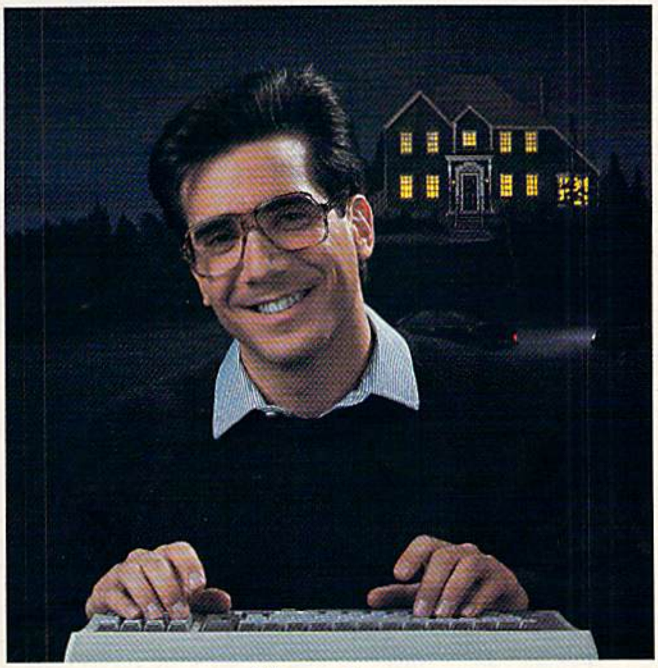

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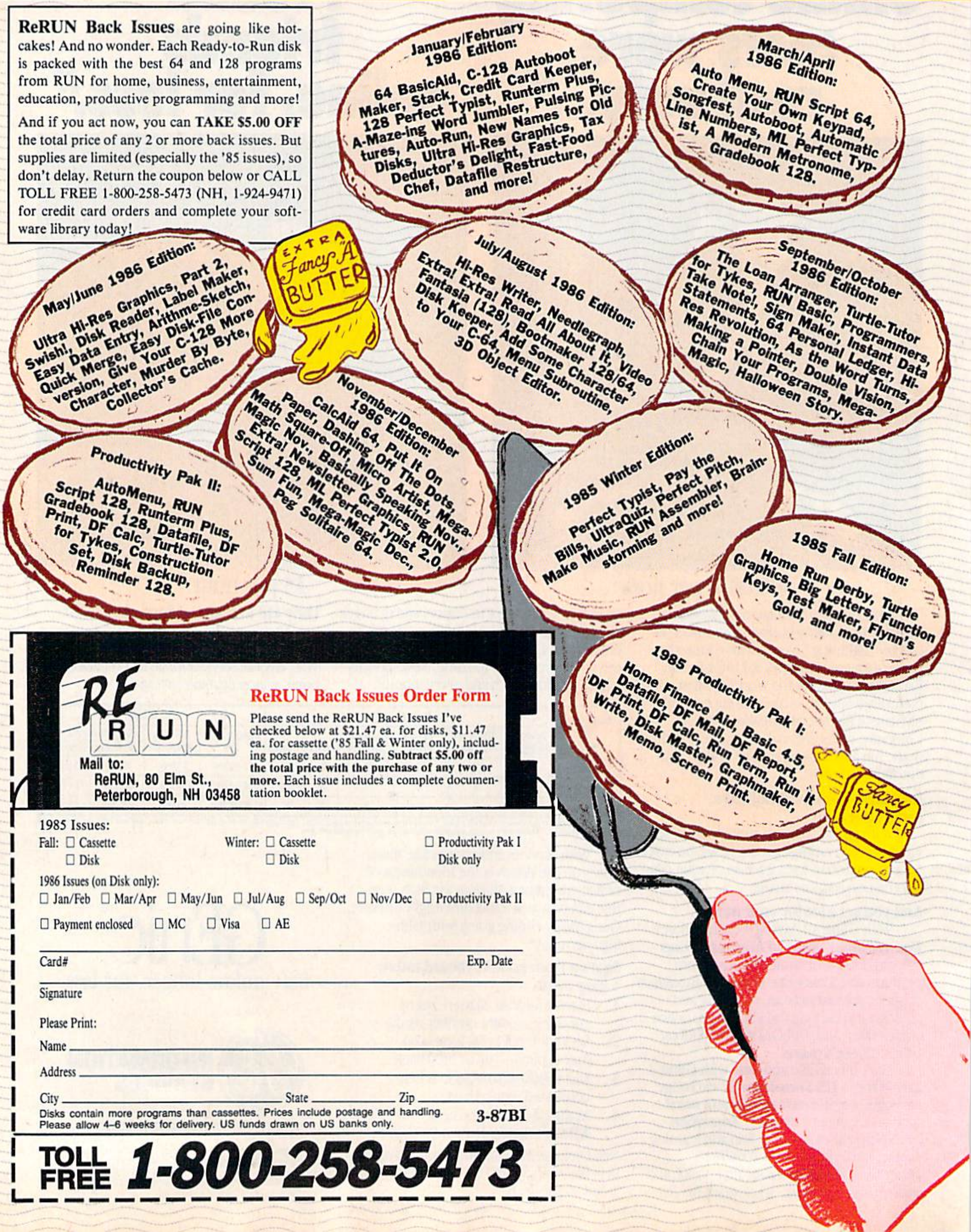

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THE ULTIMATE SCREEN SHOT

If you enjoy taking screen shots, here are a few hints to make them superb!

By MORTON KEVELSON

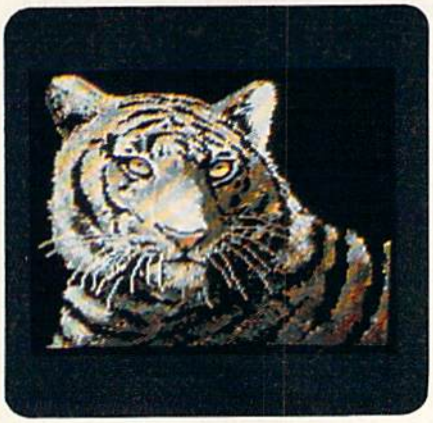
The "Focus on Screen Shots" article published in the September 1986 issue of *RUN* was a good introduction to screen photography. If you've been following the procedures it described, however, you may have noticed some limitations to the techniques. This article presents some additional hints that will help you produce truly excellent screen shots and make the process even easier than before.

Framing the Picture

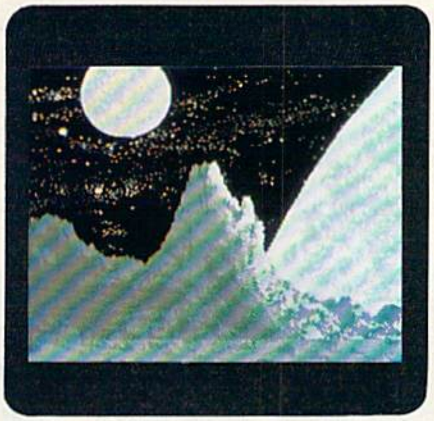
Although the standard lens supplied with your single-lens reflex (SLR) camera produces sharp pictures, it's still less than ideal for screen photography. The fault is not with the lens, but with the normal curvature of the video display screen. This curvature is unduly emphasized by the short camera-to-screen distance required to fill the frame when using a standard lens.

The solution is to use a lens with a longer focal length, which will let you move the camera away from the screen and still fill the frame. The added distance changes the perspective from the camera position, effectively flattening the appearance of the screen. I find that a 135mm lens is ideal. You may already have a general purpose zoom lens that will work just as well.

The 135mm lens will fill the frame at a working distance of about five feet, which is just a shade under the closest operating range of my lens. A minimum strength close-up lens will solve this problem, but a better solution is to obtain a set of extension tubes or focusing bellows to install between the lens and the camera's body. You could also look for a lens with "macro" capabilities. This type of lens has a long focusing thread that enables the camera to approach within inches of the subject.



Screen shot courtesy of Fox Valley 64 Users Group, N. Aurora, Illinois.



Screen shot of the Cyber Video demo disk, from Touchstone.

These gadgets have the added advantage of letting you get really close to small objects for some impressive close-up photography. I usually find that people who like to take screen shots also enjoy photographing tiny things.

When setting up the tripod, make sure you position the camera before the center of the screen so the center line of the lens is perpendicular to the screen surface. This will prevent distortion of the rectangular shape of the image.

The Exposure

The camera's built-in light meter should be used only as a guide for setting the exposure. Following it blindly for a screen filled with dark colors will result in an overexposed picture. Similarly, an image with large areas of light color will have its dark colors underexposed. Also, the light colors will lack their definitive brightness.

It will take a small amount of experimentation to discover the right exposure. Just bracket the exposure of your first screen shots one or two f-stops in either direction, and be sure to keep careful records of what you do.

I find that, for my setup, an exposure of one second at f/8 does well. Although shutter speeds as fast as ⅛ second will work, the slower one-second speed seems to produce a more uniform exposure. In addition, the greater depth of field associated with the smaller f-stop makes the focus less critical.

Unless your camera is firmly anchored to the bedrock of Manhattan, I highly recommend using a cable release for long exposures. If your camera has a built-in self-timer, it will serve just as well to eliminate the possibility of motion being transferred to the camera.

Once you decide on exposure and monitor settings, resist the temptation to fiddle with them.

You should also be aware that the settings of the video/monitor controls can have a drastic effect on the exposure and color balance of your screen photographs. I find the Commodore 1701, 1702 and 1902 (not the 1902A), and the Amiga 1080 monitors to be excellent in this regard. Their brightness, contrast, tint and color controls all have center detents that seem to have been factory-calibrated for optimum pictures.

If you elect to experiment with the monitor controls, I suggest adding your own markings to them, so they can be reset to known positions. Of course, you'll have to make a separate group of test exposures for each setting.

Once you decide on exposure and monitor settings, resist the temptation to fiddle with them, in spite of what your camera's light meter may say.

The previous article erred somewhat on the subject of video frame rates. The blanking intervals and retrace times, which are really very short, are all part of the video frame rate. The screen image of a noninterlaced display is actually redrawn 60 times per second.

Note that an Amiga running in Interlace mode will generate only 30 images per second. The resulting photos are immune to the apparent flicker that occurs with Interlace mode.

Film Processing

To avoid screen glare, you've probably been shooting in a darkened room. As a result, the area around the screen will appear nearly black on the resulting slides, making it difficult for the film developer to distinguish where one frame ends and the next begins. On occasion my Kodak-processed slides have come back with a note indicating that special attention was required to mount the slides. Just as often the slides are mounted with the images off center. A brief note on the processing envelope will alert the developer that your images will contain dark borders.

These additional hints should help you achieve truly fine screen photographs. How can you tell? Just examine your slides under magnification. You should be able to discern detail down to the pixel level.■

Address all author correspondence to Morton A. Kevelson, PO Box 260, Homecrest Station, Brooklyn, NY 11229.

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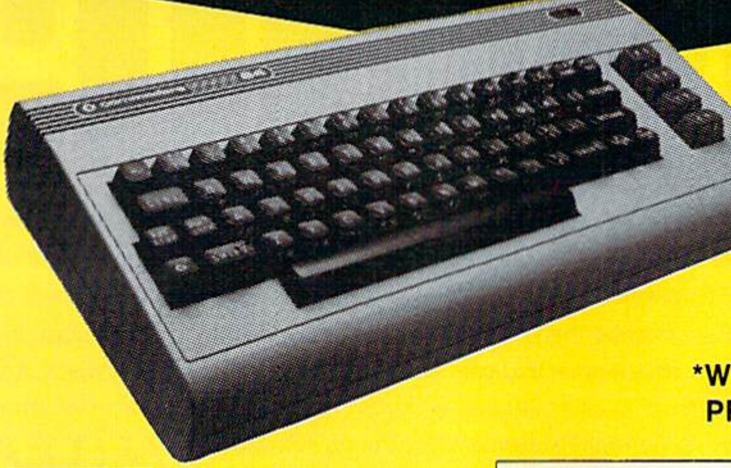

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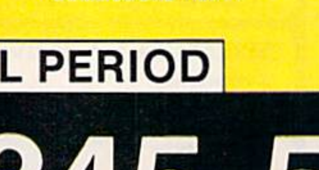

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C-128 SCREEN DUMP

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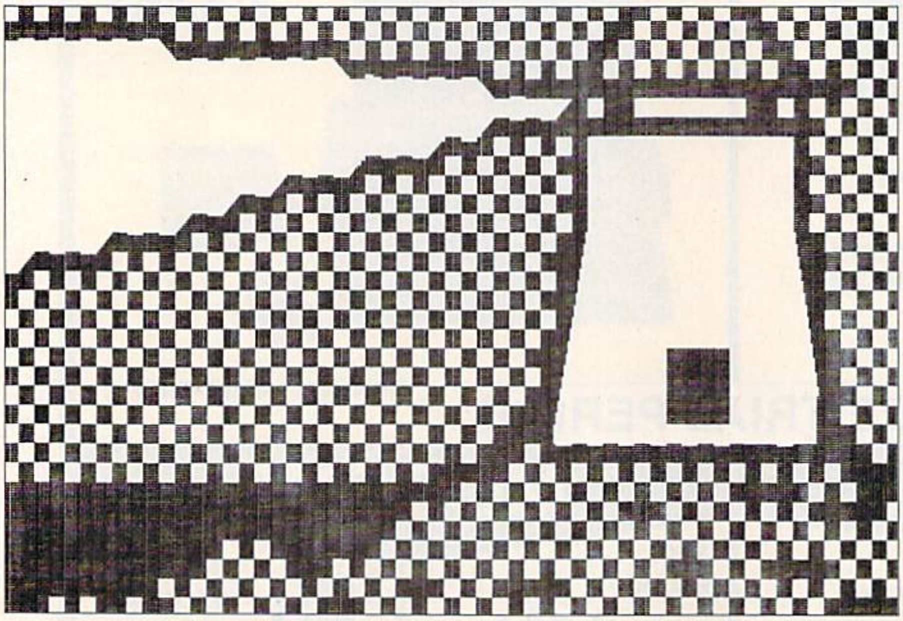
By TRENT BILLS



The C-128's Basic 7.0 includes some graphics commands that make it easy for almost anyone to create his own graphic art. Unfortunately, to print out these creations, there have been only two apparent choices: to use existing Basic hi-res screen-dump programs that take 20 minutes or more; or to save the picture and switch to C-64 mode to run a 64 screen-print program. Neither alternative is especially convenient. Here is my solution to the problem.

The screen-dump program in Listing 1 is designed to run exclusively on the C-128 in 40-column mode. It prints hi-res or multicolor graphic screens in roughly four minutes, depending on the size of the screen, and works with a 1525 or 1525-compatible printer.

After typing in, saving and running the following program, you may call the routine at any time by pressing the F8 key. (If nothing happens, press the run/stop key and then the F8 key again.) When you call the routine, you must have an image or drawing in graphic area 1 or 2. (If you have a multicolor screen in graphic area 3 or 4, you can safely reproduce it in area 1, since the screen image will be the same as in Multicolor mode.) When you access the routine, it enables the 128's Fast (2MHz) mode and turns off the screen. When the Print routine is finished, it turns the screen back on and returns to Slow (1MHz) mode.

Some of you may be wondering how the program can be so short. This is because it utilizes several routines that are built into the 128's Basic interpreter. I encourage the machine language programmers among you to experiment with these Basic interpreter routines and use them in your programs. Have fun!

Address all author correspondence to Trent Bills, 7351 Garland, Lincoln, NE 68505.

Listing 1. *C-128 Screen Print program.*

```
5 TRAP90                          :REM*51
10 REM 128 SCREEN PRINT BY TRENT
   BILLS                         :REM*172
15 KEY8,"SYS4864"+CHR$(13)
                                  :REM*67
20 FORL=DEC("1300")TODEC("13CA")
                                 :REM*116
30 READN$:N=DEC(N$):POKEL,N
                                  :REM*82
40 NEXT:NEW                       :REM*46
90 PRINT"{SHFT CLR}{CRSR DN}"ERR
   $(ER):HELP:END                :REM*182
100 DATA20,B3,77,78,A9,04,A2,04,
    A0,00,20,BA,FF,A9,00,20,BD,F
    F,20,C0,FF,A2,04             :REM*186
110 DATA20,C9,FF,A9,08,20,D2,FF,
    A9,00,8D,31,11,8D,32,11,8D,3
    3,11,8D,34,11,85,FA :REM*248
120 DATA85,FB,A9,01,85,FC,20,AF,
    13,A5,FD,F0,06,A5,FC,05,FB,8
    5,FB,E6,FA,26,FC             :REM*198
130 DATAEE,33,11,A5,FA,C9,07,D0,
    E6,A5,FB,09,80,20,D2,FF,A9,0
    0,85,FA,A9,01                :REM*238
140 DATA85,FC,AD,33,11,38,E9,07,
    8D,33,11,A9,00,85,FB,EE,31,1
    1,AD,31,11,D0,03             :REM*176
150 DATAEE,32,11,AD,32,11,F0,BA,
    AD,31,11,C9,40,D0,B3,A9,0D,2
    0,D2,FF,A9,00                :REM*208
160 DATA8D,31,11,8D,32,11,AD,33,
    11,AA,E8,E8,E8,E8,E8,E8,E8,8
    A,8D,33,11,C9,CB             :REM*246
170 DATAD0,93,20,CC,FF,A9,04,20,
    C3,FF,20,C4,77,58,60,18,20,2
    4,9D,B0,11,20,70,9C  :REM*38
180 DATA20,E8,9C,8D,6D,11,B1,8C,
    2D,6D,11,85,FD,60,A9,00,85,F
    D,60                         :REM*152
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THE COMMODORE IN THE KITCHEN

Enlist the aid of your electronic assistant to make recipe conversions come out right.

By MICHAEL BROUSSARD

Cooking has always fascinated me, because recipes are a lot like programs. After assembling and measuring ingredients, you mix them together at the right time and in the right order, and the end result is something delicious. Food recipes, however, have one major drawback: They're designed to produce a certain number of servings, and usually (at least in my house) that number is not the number needed.

If the recipe makes an extra serving, it's no big deal, unless you really hate leftovers. However, by adjusting the recipe for exactly the number of servings required, there are no leftovers, there's generally less work for the cook, and you save money as well.

Cutting a recipe in half is pretty easy if it serves four, but adjusting a recipe for four so that it feeds six can be a little tricky. What's one-half more than ¾ of a cup?

Until now, I've tried to do these conversions in my head or with a calculator. However, unless I actually write the adjusted measurements down, I catch myself remembering to double some ingredients while forgetting to double others. I always get a sinking feeling when there isn't enough batter in the cake pans, and I don't know which ingredient I forgot to double. Worse yet, the cake then ends up sinking.

Recipe Converter (Recipe, for short) is a program I wrote that takes the guesswork out of adjusting recipes. It's written completely in Basic, so it'll run on a C-64 or a C-128 with no changes.

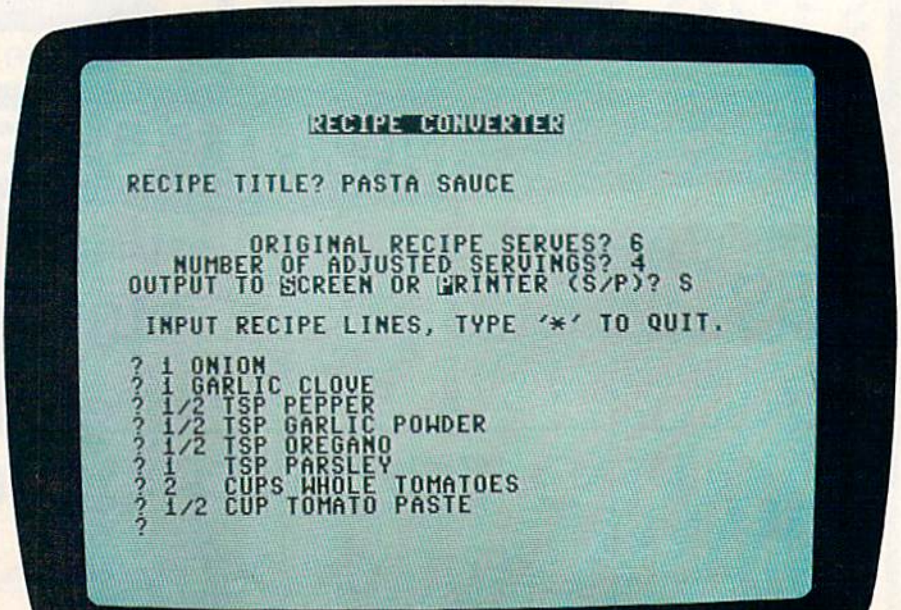
Typing In a Recipe

To use Recipe, type in the program in Listing 1 and save it to disk. When you run it, the program will first ask for the recipe title. After you type in the name, you'll be asked how many the original recipe serves. Enter the number of servings the recipe is designed for and press the return key.

The next prompt will be for the number of adjusted servings. Type in the number of servings you want the recipe to yield and press return.

Then you'll be asked whether you want the output to go to the screen or your printer. Respond with S or P. (The program assumes your printer is device number 4, but you can change this by altering the value assigned to the variable PDEV on the first line of the listing.)

Now it's time to actually type in a recipe. The program will prompt you to enter either the recipe lines or an asterisk (*) to quit. When a question mark appears, begin typing in recipe ingredients, one per line. The program expects each line to begin with a number, followed by a measurement,



```
                RECIPE CONVERTER

RECIPE TITLE? PASTA SAUCE

          ORIGINAL RECIPE SERVES? 6
   NUMBER OF ADJUSTED SERVINGS? 4
OUTPUT TO SCREEN OR PRINTER (S/P)? S

 INPUT RECIPE LINES, TYPE '*' TO QUIT.

? 1 ONION
? 1 GARLIC CLOVE
? 1/2 TSP PEPPER
? 1/2 TSP GARLIC POWDER
? 1/2 TSP OREGANO
? 1   TSP PARSLEY
? 2   CUPS WHOLE TOMATOES
? 1/2 CUP TOMATO PASTE
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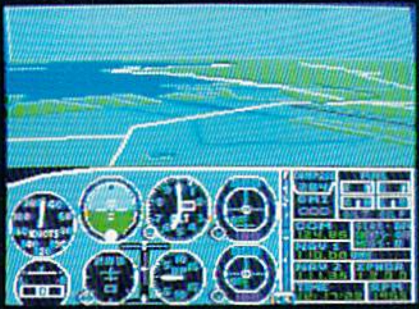

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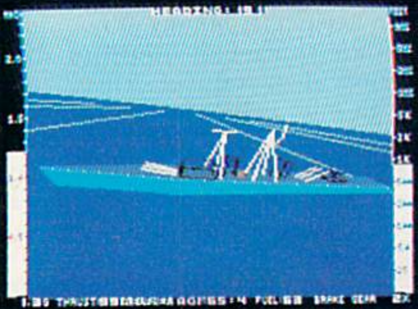

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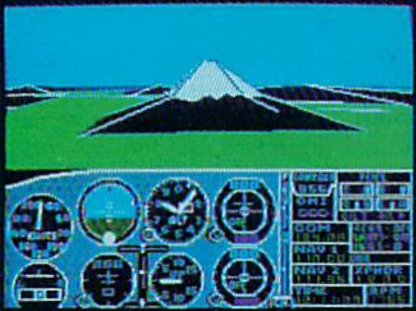

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followed by the ingredient description. For example, you might type:

2 CUPS FLOUR

Recipe understands the abbreviations C and CP for cup, so you could also type any of the following:

2 C FLOUR
2 C. FLOUR
2 CPS FLOUR

All the measurements and abbreviations the program knows are listed in the Data statements in program lines 610 and 620.

As you enter each line, there will be a brief pause as Recipe examines the measurement and performs the conversion. Since the program uses the standard Basic Input statement to get recipe lines, don't use commas or colons in the lines. For example, rather than typing:

2 CUPS ONIONS, MINCED

use:

2 CUPS MINCED ONIONS

You can input fractional measurements in two ways. For example, if the recipe calls for 2¾ cups of sugar, you can enter either of these lines:

2.75 C SUGAR
2 3/4 C SUGAR

Note that in the second example there's a space between the 2 and the ¾. This space is necessary so the program won't interpret the amount as ²³⁄₄, or 5¾, cups!

Occasionally you may run into a recipe with an unusual ingredient amount, such as 1 cup plus 1 tablespoon of flour. In a case like this, just type in the amount as two different ingredient lines:

1 CUP FLOUR
1 TBSP FLOUR

The Converted Recipe

When you've finished entering your ingredients list, type an asterisk on a line by itself to tell Recipe you're done. The converted recipe amounts will then be output to either the screen or the printer, depending on which you specified when the program started.

You'll notice that when Recipe outputs a line containing a measurement in pints or quarts, it may also include the equivalent cup measure in parentheses. For example, if you were doubling a recipe that calls for 1 cup of milk and 2 cups of flour, the output would read as follows:

1 PINT (2 CUPS) MILK
1 QUART (4 CUPS) FLOUR

The "quart of flour" appears because Recipe has no way of knowing whether you mean liquid or dry measure when you type "cups," and though milk is indeed measured in pints, we don't usually measure flour in quarts. By providing both, Recipe lets you use the measurement that's most appropriate or convenient or customary.

Recipe will also convert ingredient amounts that aren't standard liquid or dry measurements. For example, if you're doubling 2 eggs and ¾ pound potatoes, the converted amounts would be displayed as:

4 EGGS
1 1/2 POUND POTATOES

When working with non-standard measurements, Recipe rounds to the nearest eighth. For example, if you want five servings of a recipe for six that calls for 1⅜ pounds of potatoes, you end up mathematically needing 1.1458333 pounds of spuds. Recipe takes the liberty of rounding that to 1⅛ pounds. When working with standard measures, Recipe rounds to the nearest quarter teaspoon or the nearest 5 percent, whichever is most practical.

Here are some more examples of acceptable recipe input lines:

1 1/2 TSP. GROUND NUTMEG
2 1/2 TBSP MELTED BUTTER
4 EGGS
1 DASH SALT

The following input lines, on the other hand, will cause problems, for the reasons indicated:

2 OR 3 CLOVES GARLIC (two measures on the same line)
DASH SALT (a number must come first)
1 TABLESP. WATER (tablesp. is not a valid abbreviation)

Although Recipe can't make you a good cook or guarantee that your intimate meal for two will be a success when expanded for a banquet, it will at least provide you with an accurate list of ingredient conversions. If dinner is a flop, it won't be due to your lack of math skills!

I'll be happy to answer any questions you have about Recipe. Please enclose a self-addressed, stamped envelope with your inquiry, and if you can't get the program to run, send along a program listing as well. Ⓡ

Michael Broussard (13136 Lazy Glen Court, Herndon, VA 22071) is a systems engineer for Stratus Computer, a manufacturer of fault-tolerant super-mini computers.

Listing 1. *Recipe Converter program.*

```
10 PDEV=4:DEF FNC(X)=INT((X+2)/3)*3:REM*230
20 DEFFNZ(V)=V*-1*((V+.01)-INT(V+.01)>=.02)
   -INT(V+.01)*((V+.01)-INT(V+.01)<.02)
                                       :REM*190
120 DIM C(16),N$(16),T$(32),NN$(10),M$(18),
    R$(100),CV(8),CC(11),CC$(11)       :REM*218
130 FORJ=1TO16:READC(J):NEXTJ:FORJ=1TO16:RE
    ADN$(J):NEXT                       :REM*168
140 FORJ=1TO18:READM$(J):NEXT:FORJ=1TO8:REA
    DCV(J):NEXT                         :REM*28
150 FORJ=1TO11:READCC(J):NEXT:FORJ=1TO11:RE
    ADCC$(J):NEXT                       :REM*22
160 PRINT"{SHFT CLR}{2 CRSR DNs}"TAB(12)"{C
    TRL 9}RECIPE CONVERTER{2 CRSR DNs}":INP
    UT"RECIPE TITLE";T$                 :REM*54
170 S1=0:INPUT"{2 CRSR DNs}{8 SPACEs}ORIGIN
    AL RECIPE SERVES";X$:S1=VAL(X$):IFS1<1T
    HEN170                               :REM*8
180 S2=0:INPUT"{3 SPACEs}NUMBER OF ADJUSTED
     SERVINGS";X$:S2=VAL(X$):IFS2<1THEN180
                                        :REM*68
190 INPUT"OUTPUT TO {CTRL 9}S{CTRL 0}CREEN
    OR {CTRL 9}P{CTRL 0}RINTER (S/P){2 SPAC
    Es}P{3 CRSR LFs}";D$               :REM*126
200 PDEV=-3*(D$="S")-4*(D$="P")        :REM*122
210 PRINT"{CRSR DN} INPUT RECIPE LINES, TYP
    E '*' TO QUIT.{CRSR DN}":NL=0       :REM*74
220 INPUTS$:IFS$="*"THEN350            :REM*178
230 GOSUB400:IFNT>=2THEN250            :REM*220
240 PRINT"{CTRL 9}DON'T UNDERSTAND THIS LIN
    E.":GOTO220                        :REM*248
250 S$=T$(1):GOSUB460:IFEXTHENPRINT"{CTRL 9
    }AN AMOUNT MUST COME FIRST":GOTO220
                                       :REM*166
260 V=X:S$=T$(2):Z=2:GOSUB460:IFEX=0THENZ=3
    :V=V+X                             :REM*217
```

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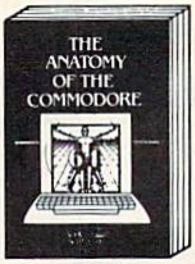

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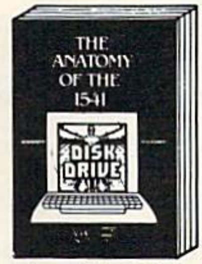

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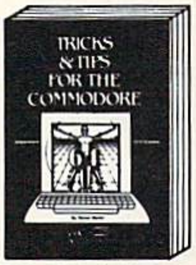

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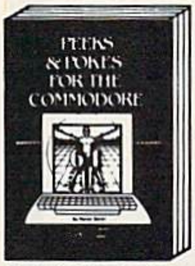

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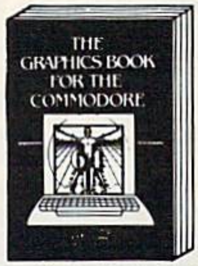

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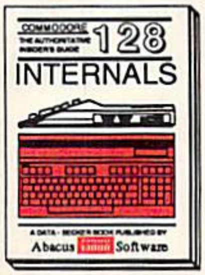

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Listing 1 continued.

```
270 IFZ>NT THEN240                         :REM*57
280 P$=T$(Z):GOSUB540                      :REM*55
290 GOSUB 660:GOTO300                      :REM*27
300 IFZ>NTTHEN340                          :REM*89
310 FOR J=Z TO NT:X$=X$+" "+T$(J)   :REM*161
320 IF(J=Z)AND(J=NT)AND(P=0)AND(V>1)AND(RIG
    HT$(T$(J),1)<>"S")THENX$=X$+"S":REM*113
330 NEXT                                   :REM*85
340 NL=NL+1:R$(NL)=X$:GOTO220             :REM*157
350 CLOSE3:OPEN3,PDEV                     :REM*149
360 PRINT#3:PRINT#3:PRINT#3:W=80:IFPDEV=3TH
    ENW=40:PRINT#3,"{SHFT CLR}"            :REM*69
370 PRINT#3,SPC((W-LEN(T$))/2*-(LEN(T$)<=W)
    )T$                                   :REM*149
380 X$="(SERVES"+STR$(S2)+")":PRINT#3,SPC((
    W-LEN(X$))/2)X$:PRINT#3:PRINT#3  :REM*9
390 FORJ=1TONL:PRINT#3,R$(J):NEXT:PRINT#3:C
    LOSE3:END                             :REM*149
400 NT=0:J=1:A$="":F=1                    :REM*165
410 IF J>LEN(S$)THEN ON F GOTO 450,440
                                           :REM*63
420 B$=MID$(S$,J,1):IFB$=" "THENJ=J+1:ON F
    GOTO 410,440                          :REM*145
430 A$=A$+B$:J=J+1:F=2:GOTO410            :REM*213
440 NT=NT+1:T$(NT)=A$:A$="":F=1:GOTO 410
                                          :REM*163
450 RETURN                                :REM*253
460 X=0:NN=0:J=1:A$="":F=1:EX=0            :REM*45
470 IF J>LEN(S$)THEN ON F GOTO 510,500
                                          :REM*157
480 B$=MID$(S$,J,1):IF(B$>="0"ANDB$<="9")OR
    B$="."THENA$=A$+B$:J=J+1:F=2:GOTO470
                                          :REM*231
490 IF B$<>"/"THEN EX=1:RETURN            :REM*113
500 NN=NN+1:NN$(NN)=A$:A$="":J=J+1:F=1:GOTO
     470                                  :REM*225
510 IF NN>2 OR VAL(NN$(1))=0THEN EX=1:RETUR
    N                                      :REM*17
520 X=VAL(NN$(1)):IF NN>1 THEN X=X/VAL(NN$(
    2))                                    :REM*86
530 RETURN                                 :REM*78
540 L=LEN(P$):X$=MID$(P$,L):IFX$="." THEN I
    FL>1 THENP$=LEFT$(P$,L-1)             :REM*154
550 L=LEN(P$):X$=MID$(P$,L):IFX$="S" THEN I
    FL>1 THENP$=LEFT$(P$,L-1)              :REM*58
560 P=0:FORJ=1TO18:IFP$=M$(J)THENP=FNC(J):R
    ETURN                                 :REM*214
570 NEXTJ:RETURN                           :REM*14
580 DATA 1,2,4,8,12,24,36,48,64,96,128,144,
    192,384,768,1536                       :REM*58
590 DATA 1/4 TSP,1/2 TSP,1 TSP,2 TSP,1 TBSP
    ,2 TBSP,3 TBSP,1/4 CUP,1/3 CUP :REM*100
600 DATA 1/2 CUP,2/3 CUP,3/4 CUP,1 CUP,1 PI
    NT, 1 QUART, 1 GALLON                 :REM*140
610 DATA T,TSP,TEASPOON,TB,TBSP,TABLESPOON,
    C,CP,CUP,P,PT,PINT                    :REM*116
620 DATA Q,QT,QUART,G,GAL,GALLON          :REM*134
630 DATA 4,12,192,384,768,1536,0,0         :REM*38
640 DATA 0,.125,.25,.333333,.375,.5,.625,.6
    66666,.75,.875,1                      :REM*130
650 DATA ,,1/8,1/4,1/3,3/8,1/2,5/8,2/3,3/4,
    7/8,1                                 :REM*116
660 V=FNZ(V)*(S2/S1):IFP=0THENGOSUB880:RETU
    RN                                    :REM*184
670 Z=Z+1:J=FNC(P)/3:IF(J<6)OR(S1>S2)THEN69
    0                                      :REM*94
680 V=FNZ(V):GOSUB880:X$=X$+" GALLON"+MID$(
    "S",1,-1*(V<>1)):GOSUB780:RETURN
                                          :REM*106
690 V=FNZ(V+.005*-1*(INT(V)=V))*CV(J):X$=""
    :VV=V*-1*(V>383OR(P=9ANDS1<S2)):VX=V
                                          :REM*146
700 J=1                                   :REM*146
710 IFC(J)<=VTHENJ=J+1:IFJ<17THEN710:REM*50
720 IFJ=17THENV=V/1536:GOTO680             :REM*88
730 J=J-1:X$=X$+N$(J):V=FNZ(V-C(J)):IF VV A
    ND V<48 THEN GOSUB 780                :REM*128
740 IF V>=1 AND V/VX>.05 THEN X$=X$+" PLUS
    ":GOTO700                             :REM*172
750 IF VV THEN GOSUB 780                  :REM*194
760 IF X$=""THEN X$=X$+"1 DASH"           :REM*182
770 RETURN                                 :REM*63
780 K=INT(VV/192):IFK<2THENVV=0:RETURN
                                          :REM*187
790 X$=X$+" ("+MID$(STR$(K),2):VV=VV-K*192:
    K=1                                    :REM*99
800 IFC(K)<=VVTHENK=K+1:GOTO800            :REM*59
810 VV=0:IFK>8THENX$=X$+" "+N$(K-1)+"S)":RE
    TURN                                  :REM*107
820 X$=X$+" CUPS)":RETURN                 :REM*145
830 IF VV=0 THEN RETURN                    :REM*75
840 X$=X$+" ("+MID$(STR$(INT(VV)),2)+" "
                                           :REM*67
850 K=1:J=VV-INT(VV):IFJ=0THENX$=X$+"CUPS)"
    :RETURN                               :REM*159
860 IF (J-CC(K))>.05 THEN K=K+1:GOTO860
                                          :REM*119
870 X$=X$+N$(K)+"S)":RETURN               :REM*249
880 V1=INT(V):V2=V-V1:J=1                 :REM*127
890 IF(CC(J)-V2)>.0625THEN920              :REM*37
900 J=J+1:IFJ<11THEN890                     :REM*5
910 X$=MID$(STR$(V1+1),2):RETURN           :REM*45
920 X$="":IFV1>0THENX$=MID$(STR$(V1),2)+"{S
    HFT SPACE}"                            :REM*97
930 X$=X$+CC$(J):RETURN                   :REM*253
```

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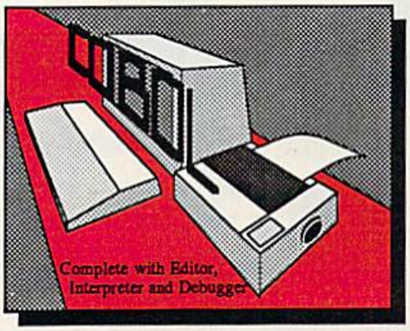
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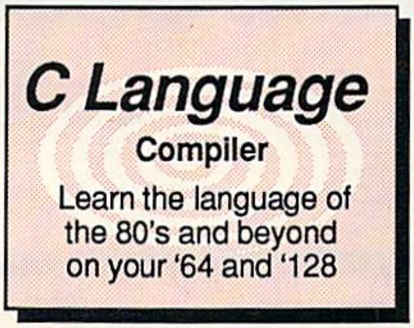
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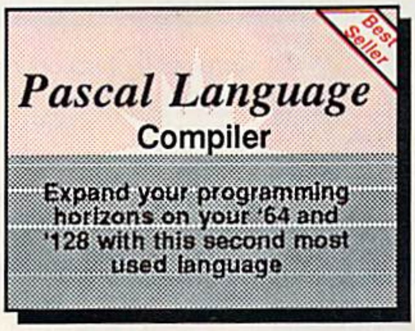
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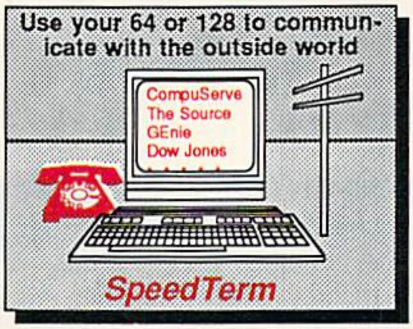
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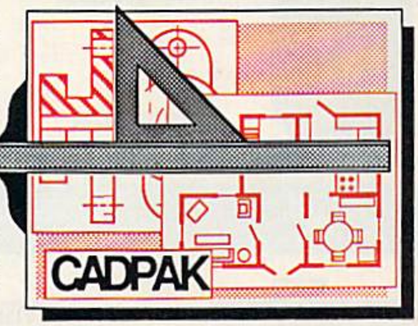

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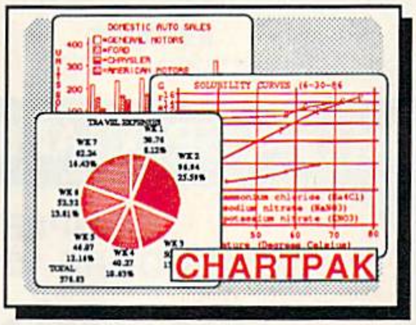
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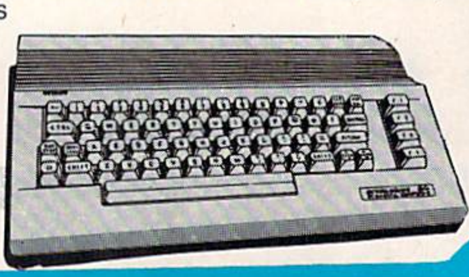

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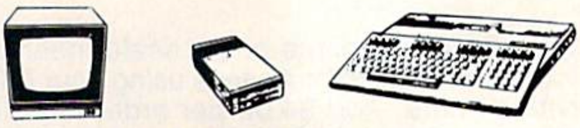

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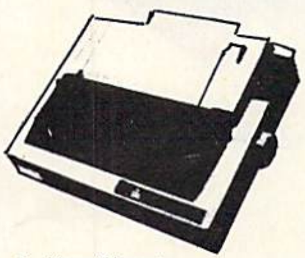

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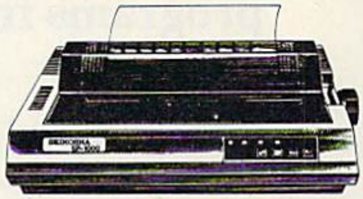

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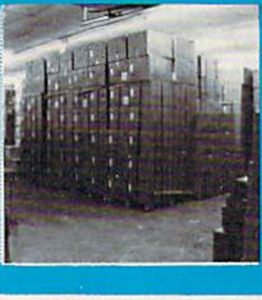

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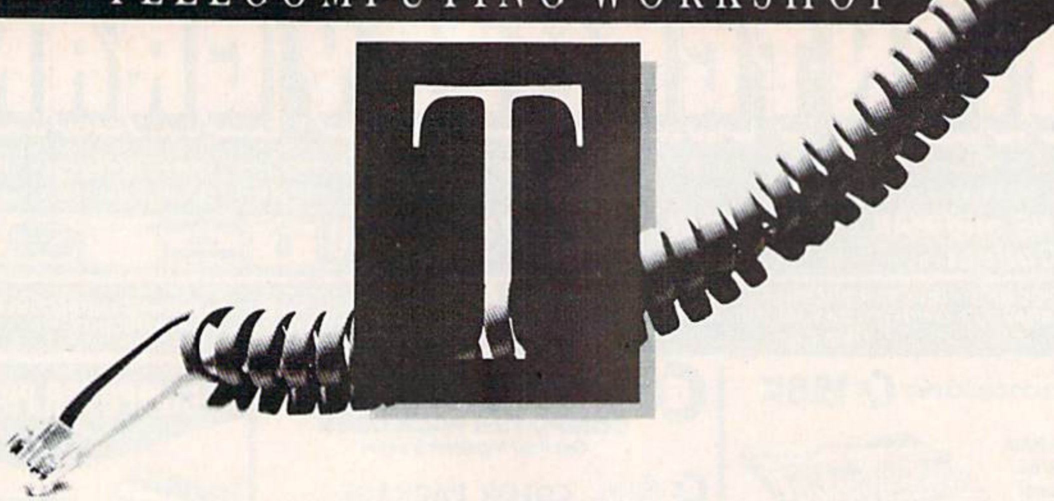

By DAVID BRADLEY

Telecomputing Workshop is a monthly column dedicated to the needs of RUN *readers who are using, or intend to use, a Commodore computer for telecommunications. We invite you to submit your questions or comments to:*

David Bradley
Telecomputing Workshop
c/o RUN *magazine*
80 Elm St.
Peterborough, NH 03458

I tried to access *RUN*'s bulletin board, the RUNning Board, while using the Total Telecommunications disk and a TeleLearning modem. After I went through the whole procedure, the terminal said READY, but nothing happened. I tried just waiting, as well as pressing return first once and then twice, but to no avail. What was I doing wrong?

I've also been trying to access CompuServe with my Commodore 1670 modem. I've changed the baud rate on the Total Telecommunications disk, but it won't dial the number (the screen shows it dialing, but the modem isn't actually doing so). Do I have to change other parameters to go from 300 baud to 1200 baud for CompuServe?

Chris A. Raudonis
Hudson, NH

To get onto the RUNning Board, your terminal parameters should be set at 300 baud, one stop bit, no parity, full duplex and a word length of 8 bits. Then, you or your system should dial the number 1-603-924-9704. When you get a carrier, press the return key. You'll be asked if you require line feeds, and then you're in. If you get through and access the carrier but nothing happens, try again in a couple of days. A power failure or something else might be crippling the system temporarily.

The reason the Total Telecommunications program isn't dialing with the 1670 modem is that the TeleLearning modem and the 1670 don't dial in the same way. The TeleLearning modem dials only pulse, and the program must tell it when to do each pulse. The 1670 is a little smarter. You just tell it that you want to dial a number (pulse or tone), and it does the rest.

To make the 1670 dial from just about any terminal program, go into Terminal mode, enter AT (short for "attention") and press the return key. The modem should reply by saying OK. When the modem receives the AT, it knows you want to talk to it. Remember that all commands sent to the modem must begin with AT.

To make the 1670 dial pulse, enter ATDP followed by the number to dial. To dial using tones, enter ATDT followed by the number to dial. Thus, to call the RUNning Board using pulse, you would enter ATDP16039249704 and press the return key. You should hear a dial tone and then the number being dialed. When a carrier is received, the modem will make the connection.

Many terminal programs, both public domain and commercial, support the 1670. I recommend Bobs-Term Pro from Progressive Peripherals & Software, 464 Kalamath St., Denver, CO 80204; 303-825-4144. It's available for the C-64 and the C-128.

If you'd prefer a public domain terminal program, Public Domain Solutions offers a disk of them for the 1670. Send $5, plus $1 for postage and handling, to Public Domain Solutions, PO Box 832, Tallevast, FL 34270.

I have a Hayes Smartmodem 300 and need an RS-232 adapter to make it work on my C-64. Do you know where I can obtain one?

Clint Roudenbush
Dallas, TX

I own a C-64 that I've been using with a 300-baud modem for the past three years. I recently acquired a 1200-baud modem manufactured by Racal-Vadic (model VA212LC). This modem is supposed to be compatible with the Hayes. Can I hook it up to my C-64, and, if so, where can I buy the parts to interface it with the C-64? Also, is there any special software I can use?

Fred Vogel, Jr.
New City, NY

In answer to your questions, check out the Omnitronix Deluxe RS-232 Interface. It will let you connect an RS-232 modem to a VIC-20, C-64, C-128, SX-64 or Plus/4. You won't need a cable because this interface has one built in. It costs $49.95, and

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Commodore used to make an RS-232 interface called the VIC-1011a, and Batteries Included made a similar product. It's my understanding that neither is currently in production, but you might be able to find one if you keep your eyes open. They both require an additional male-to-male RS-232 cable.

Is there a terminal program for the C-64 that will support the Kermit transfer protocol? If so, where might I obtain it?

Mike Hunsicker
Greenfield, MA

If you're a member of Quantum-Link or GEnie, you should be able to find a Kermit program on-line. Public Domain Solutions (PO Box 832, Tallevast, FL 34270) also has one for $5, plus $1 for postage and handling.

I live out in the boonies of southern Georgia, and the only way to connect to a national on-line network is at normal long-distance phone rates. This has prevented me from getting on-line. Is there any system or network that has a toll-free call-in number, even if it has a high monthly minimum charge?

There is a Tymnet access number in Savannah (about 30 miles away), but that's still a long-distance call. There are several C-64 users in this area, and we're all in the same boat.

Woodrow W. Smith
Midway, GA

I don't know of a network with a toll-free number, but I'll keep looking for one. Meanwhile, you might try to find someone who lives between you and Savannah and is a local call away from both. If that person has call forwarding, ask him or her to forward your call to the Tymnet node in Savannah. Then see if the call appears on your next bill.

If you aren't charged for the call, a group of C-64 users in your area might consider getting an additional phone line installed in the intermediary's house and have all the calls to that line forwarded to the node number. Then all of you could call Tymnet via this line with no long-distance charge. I know this works in the area where I live, so it's worth a try.

Telecomputing Tip of the Month

If you use more than one BBS, be sure to use a different password on each. Then, if you ever suffer some sort of security leak, you'll have to change your password only on the affected system.

Also, don't use passwords that have an obvious connection to you. Many people use their spouse's or pet's name, the type of vehicle they drive or their favorite hobby. Make the intruder's job more difficult by using a word or group of characters that doesn't relate specifically to you or anything you've done.■

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The Newest and Most Effective Parameter Copier to date, is now ready for shipping. Parameters R' Us, will ELIMINATE all the protection of the most popular and most protected software available for the C-64/128. Parameters R' Us is completely menu driven and easy to use by anyone.

FEATURES INCLUDE: works in seconds, eliminates protection, menu driven, works on 1541 and the 1571, copies made are fully compatible with 3rd party drives, and updated every 2 mounts.

$4.99 **PARAMETERS R' US (10 pack)**

The 10 pack is for those that can't wait 2 mounts for the next release of the next (100 pack). This package will be released every 1 to 2 weeks and will include those titles that were just released.

$4.99 **PARAMETERS R' US (GEOS pack)**

This Parameter disk was designed just for GEOS and all its Utility packages. Not only will it eliminate the protection, but will also allow use of GEOS UTILITIES (desk pack, writers workshop, geo dex) with any GEOS that has been FIXED with this set of parameters.

$19.95 **LOCK PICK-64/128**

Was designed for the collector in mind. Lock pick will allow you to put up to 600 parameters on each side of a disk. Lock Pick-64/128 also breaks the protection out of keys and parameter for easy back up.

$29.95 **LOCK PIK C64/128 (The Book)**

Lock Pk 64/128 was put together by Utilities Unltd. as a tool for those who have a desire to find out how the heavy Hackers do it. This package includes:

1. Lock Pik book that gives you step by step instructions on BREAKING or backing up over 100 popular programs using Hesmon and Superedit. The instructions are so clear and precise that anyone can use it.
2. Lock Pik disk has Mesmon 64, Superedit, Disk Compare, Kernal Save, I/O Save, and Disk File Log with detailed instructions on how to use these programs all on 1 disk.
3. We also have a limited supply (7500) Hesmon cartridges that will be given out free with the first 7500 orders.

I think you will agree this is the best buy to come along in a long time, you get it all for $29.95.

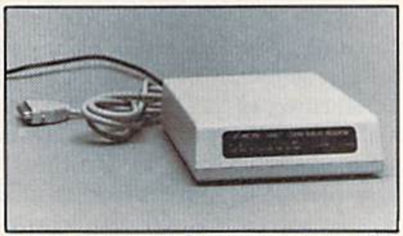
Circle 187 on Reader Service card.

The Great Communicator

Direct-connect Hayes/Commodore® 1670 compatible 1200 Baud modem for ONLY $119.95.

Now that you're able to do all those stand alone applications with your Commodore, like word processing, spread sheet analysis, and many others, you are probably thinking "It would sure be nice if I could expand the amount of data I have access to." You are quite right, everything from Electronic Mail (E-mail) to stock quotes and huge databases of every imaginable type is now on line to the small computer owner. You can even send and receive telexes anywhere in the world. All you need is a telephone and a modem which allows your computer to communicate with others through these many services.

The next question is: "Which modem is best for me?" Let me first say that almost all modems (and services) are set up to communicate in one of two speeds; 300 and 1200 Baud. If you look around you will find that there is a flood of 300 baud modems on the market and sometimes at very low prices. The reason is simple, they are being dumped because most computer users prefer 1200 Baud. (1200 Baud is about 4 times as fast which means you spend less time and money getting the data you want and more time enjoying it.) Virtually everyone who has a 300 would rather have a 1200. You will also notice a few very cheap 1200s on the market at "too good to be true prices". They are. The reason is that they are either not truly Hayes and/or Commodore compatible therefore not usable in all situations and with all services.



The Aprotek-1200C is both Hayes and Commodore compatible and 1200 baud. Why not get a modem that will satisfy your present AND future needs by going directly to an inexpensive Aprotek-1200C especially when we have it on sale?

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Do you have more than one computer or do you plan to get another computer? You can have your cake and eat it too. Simply order our Universal RS-232 interface #5232 along with the standard Aprotek-1200 which you can use with any computer that has a RS-232 serial port as well as your Commodore.

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Now you can connect and communicate with any of the popular RS-232 peripherals using your Commodore User Port. You can even connect more than one and leave it permanently attached. This superb expander opens a whole new world to your Commodore computer's capabilities. You can now connect to printers, modems and any other RS-232 devices. If you already have a device that connects to the User Port, don't worry because the port is duplicated on the outside edge of the interface. Simply plug it in and turn on the device you want to communicate with. Comes complete with sample driver program listings. Compatible with all Commodore home computers with a user port. 1-year warranty. **Order #5232.**

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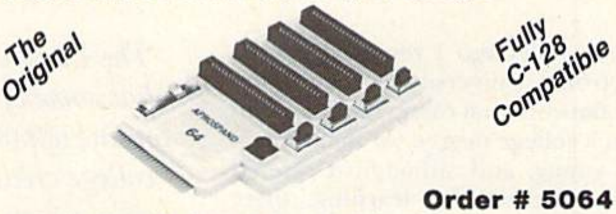

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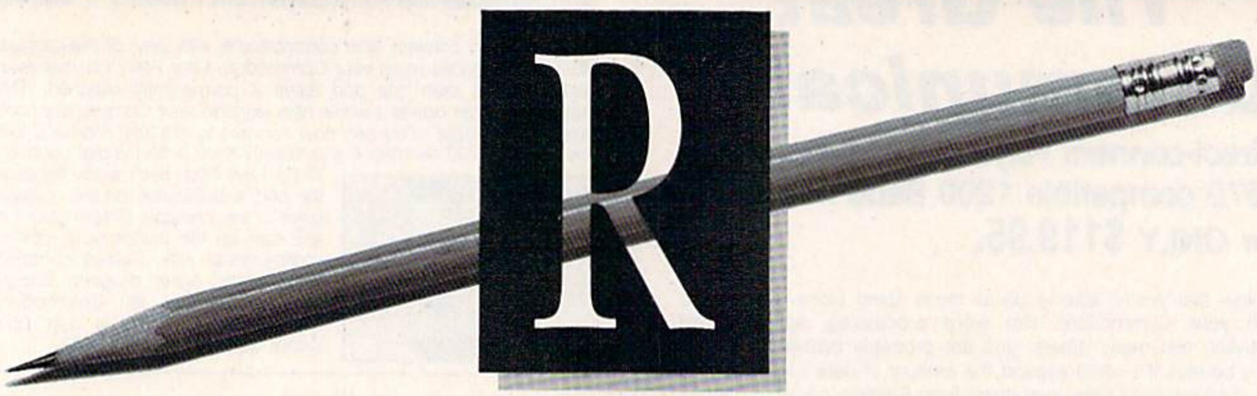

By MARGARET MORABITO

Two years ago I reported on the Electronic University, a unique online network that offers the chance to earn a college degree. At that time, it was young, and although it offered great potential for learning, there were problems to be overcome. The software was slow and was in need of strong technical support, and the network didn't have the support of major universities across the nation.

Now I'm pleased to report on improvements in TeleLearning's Electronic University. The network has matured in several ways and today is a key force in providing higher education to the adult working person.

In the Beginning

TeleLearning, Inc., from San Francisco, California, opened the Electronic University Network (EUN) three years ago. Originally, the network catered only to Commodore 64 owners, a credit to the millions of home users who bought this computer. As the concept of on-line learning gathered steam, however, the demand from other computerists grew and resulted in EUN's opening its doors to Apple and IBM users, too.

While the original concept was to enroll the millions of home computerists in personal enrichment courses, many students of EUN today are corporate employees who want to earn a college degree. EUN has about 5000 students who work for corporations and have their education financed through tuition reimbursement options.

Students are drawn to the network because it lets them go to college without disrupting their home and work life through travel to attend scheduled classes. Also, on-line learning is self-paced and individualized, with students corresponding directly with their instructors through electronic mail.

The Electronic University has come of age, providing on-line opportunities to earn college credits and degrees.

A Communications Channel

The goal of the Electronic University Network is to provide a channel through which students and professors can communicate. It's a communications network, not a university, but its staff is devoted to the advancement of education and is working to make student enrollment and participation both easy and motivating.

The EUN staff provides student counseling on which courses to take, advice on how to procure books and other study materials, preparation of the paperwork needed by each college through which a student takes a course, and technical support if a student runs into computer problems. You can even order a computer and your books directly from EUN.

The professors come from universities and colleges across the nation. They create the courses, select the texts, and teach over the modem and phone lines via the network.

College Credit

EUN provides courses for students to take for college credit, as well as seminars and some other noncredit courses. Since most of the network's students are working adults who want to move up in their companies and need a college degree to do so, credit courses are in demand. Currently, you can earn Associate in Arts, Associate in Science in Management, Bachelor of Arts, Bachelor of Science in Business Administration and Master of Business Administration degrees through EUN.

Of course, you have to be enrolled in a college or university to receive credit for the courses you take. If you aren't already enrolled in a local college, you can enroll in one of three colleges that work directly with and offer degrees through EUN. These are JFK University in California, Thomas Edison State College in New Jersey and the State University of New York/Regents College.

These three colleges handle off-campus students specifically, allowing them to take courses and earn their degree credit from a variety of sources, including EUN. You can also get credit from these institutions for prior course work at other colleges, work experience, CLEP (College Level Examination Program) tests and correspondence courses.

There are three ways to use the credits earned through EUN. You can take courses without actually working toward a degree; you can study in an associate's, bachelor's, master's or certificate program; or you can accumulate credits from on-line courses and transfer them to a local college where you're enrolled.

Only NRI teaches you to service all computers as you build your own fully IBM-compatible microcomputer

NEW! Train with the newest Sanyo 880 Series Computer—it's fully IBM-compatible and runs almost twice as fast!

With computers firmly established in offices—and more and more new applications being developed for every facet of business—the demand for trained computer service technicians surges forward. The Department of Labor estimates that computer service jobs will actually *double* in the next ten years—a faster growth rate than for any other occupation.

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No computer stands alone... it's part of a total system. And if you want to learn to service and repair computers, you have to understand computer *systems.* Only NRI includes a powerful computer system as part of your training, centered around the new, fully IBM-compatible Sanyo 880 Series computer.

As part of your training, you'll build this highly rated, 16-bit, IBM-compatible computer system. You'll assemble Sanyo's "intelligent" keyboard, install the power supply and disk drive and interface the high-resolution monitor. The 880 Computer has two operating speeds: standard IBM speed of 4.77 MHz and a remarkable turbo speed of 8 MHz. It's confidence-building, real-world experience that includes training in programming, circuit design and peripheral maintenance.

No experience necessary—NRI builds it in

Even if you've never had any previous training in electronics, you can succeed with NRI training. You'll start with the basics, then rapidly build on them to master such concepts as digital logic, microprocessor design, and computer memory. You'll build and test advanced electronic circuits using the exclusive NRI Discovery Lab®, professional digital multimeter, and logic probe. Like your computer, they're all yours to keep as part of your training. You even get some of the most popular software, including WordStar, CalcStar, GW Basic and MS DOS.

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NRI is the only technical school that trains you on a total computer system. You'll install and check keyboard, power supply, disk drive, and monitor, following step-by-step directions.

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445-037

The Resource Center

The 1986–87 EUN catalog lists 22 colleges and universities that offer courses through the network. Most of the courses are available through the three degree-granting universities I mentioned above, and others are offered on a limited basis from major campus-based universities. These schools award credit for their courses, and you can then transfer that credit toward your own degree program.

Some of the participating schools are Boston University, California State Polytechnical University, Eastern Michigan University, Ohio University, Penn State University, the University of Illinois, the University of Iowa and Washington State University.

The Instruction

One of the most intriguing aspects of EUN is the way it implements on-line learning. For each course, you receive a textbook, a workbook and a TeleLearning course disk that includes lessons and assignments. EUN encourages its professors to pursue a multimedia approach, so some courses use other kinds of learning aids as well. For example, a student might view a videotape as part of a lesson. On-line time is kept to a minimum and is used only for uploading and downloading assignments and for electronic mail.

Typically, after registration in a course, a student logs onto EUN and receives a welcome message and the first assignment from the professor. Then he or she logs off and studies off-line. This studying includes reading from the text, doing exercises in the workbook and preparing the homework assignment for uploading back to the instructor.

Except for going on-line, these are all traditional methods of instruction. EUN doesn't buck the educational system; it enhances it with the goal of offering the student a variety of proven methods for learning.

New Software

Since December of 1986, TeleLearning has offered a new instructional delivery system, developed by Dr. James Milojkovic of Stanford University.

Called Protege, this software is a significant improvement over that originally provided by TeleLearning. Protege is faster, due in part to data compression of lessons; it's crash-proof and easier to use; it provides more opportunity for communication with the instructor; it's menu-driven, with windows; and it makes help files always available.

The software relies on about 35 different templates that instructors can use to create course lessons. The student works within these templates as he or she proceeds through the course. In preparing homework, the student uses a variety of tools built into the templates that emulate word processor, database and communications functions.

The Cost

You pay $195 ($125 if you work for a participating corporation) for a lifetime EUN membership, which can be used by any member of your family. This enrollment fee lets you communicate on the network, register for courses and access the counseling service and library.

Each course also carries its own tuition fee of $60–$80 per undergraduate credit and $100–$130 per graduate credit. In most cases, the course fee covers the course disks, the professor's time and telecommunications costs. Textbooks, study guides and other materials are additional. These costs are about the same as for a course at a private college.

If you're enrolling as a new student in a participating college or university, you must also pay that school's fees, which vary from school to school. EUN counselors let you know what all your fees are at the time of registration.

Course counseling is included in your enrollment fee at EUN, and when you access the library, you pay only for the time you accrue in the database you use. The library consists of 60 databases and other services.

The Electronic University Network isn't for all students, but it does fill the growing need of our adult population for higher education without physically going back to school. For more information about this network, write to the Electronic University Network, 505 Beach St., San Francisco, CA 94133, or telephone 1-800-22LEARN.■

If you're using Commodore computers for educational purposes (at home or in school) and would like to share your experiences through The Resource Center, write me a letter detailing the equipment you're using, subject areas being taught, grade level or age of your students, software that you're using and any other information you feel like including.

Also, if you'd like to donate public domain educational programs to The Resource Center for sharing with other educators or parents, please send along a disk with a brief description of the program. Send correspondence and disks to:

Margaret Morabito
The Resource Center
c/o RUN *magazine*
80 Elm St.
Peterborough, NH 03458

You can also leave mail in my on-line mail boxes: CompuServe (70616,714) or QuantumLink (MARGM).

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Buy your 256 Kbyte AMIGA memory expansion from **Skyles Electric Works** at the **lowest price** from the **most reliable** and **most proven** Commodore expansion memory builder in the world.

256-K Memory for AMIGA	**$79.95***

> ***A panoramic passel of pelucid paragraphs presented by a premier purveyor***

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Available now from Skyles Electric Works. We had so much fun developing the **256-K Memory for Amiga** that we decided to offer **1 Mbyte, and 2 Mbyte, Memories for Amiga.** Consider, 1,048,576 or 2,097,152 bytes of memory designed to plug directly into the right side of the **Amiga**. Each memory board offers full 86 pin buffered pass-thru with Addmem or Auto-config on turn on. We searched America for the best **Amiga Memory** and found it.

1 Megabyte Amiga Memory	**$499.95***
2 Megabyte Amiga Memory	**$949.95***

MIDI for AMIGA

A Standard MIDI IN, 2 MIDI OUT, and MIDI THRU Interface for the **Amiga** Computer. Plug it into the RS-232 Port on the rear of your **Amiga** and you are ready to use Musical Instrument Digital Interface (MIDI) instruments and devices with your **Amiga**. Designed to be used with standard MIDI cables and all the presently available **Amiga** MIDI software. The **MIDI for Amiga Interface** gets the job done at a bargain price.

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We Were Shocked When We Discovered that the otherwise friendly **Amiga** "would not even give us the time of day". We immediately set about fixing the problem with **Clock for Amiga**. No longer is it necessary to set the clock via Preferences. With **Clock for Amiga** you can have the time of day set automatically each time you turn on your **Amiga**. **Clock for Amiga** is a small cartridge that plugs onto the 86 pin connector on the right side of your **Amiga**. **Clock for Amiga** runs for two years even if your **Amiga** is turned off. Get **Clock for Amiga** today and let your **Amiga** be an amiga.

Clock for Amiga	**$79.95***

2 for 1 MONITOR CABLE/C128

The **2 for 1 Monitor Cable** allows all composite video monitors to be used with the **Commodore 128** in all modes of operation. Don't throw out your present green or amber monitor, buy a **2 for 1 Monitor Cable.**

2 for 1 Monitor Cable for C-128	**$24.95***

1541 FLASH!

The new Skyles Electric Works **1541 FLASH!** loads programs and files to your **Commodore 64/64C or Commodore 128** (64 mode) three times faster than an unenhanced Commodore 1541 disk drive. **1541 FLASH!** saves programs 20 to 50 percent faster. **1541 FLASH!** formats a diskette in 25 seconds, a real flash.

The **1541 FLASH!** is a permanent hardware installation in your **Commodore 64/64C** and **Commodore 128** (64 mode) and **1541 disk drive.** No programs to load, no cartridge hassles.

We have special versions of the **1541 FLASH!** for the **SX-64** and two **1541s**.

In addition to its blinding speed of program and file loading, the **1541 FLASH! adds over 50 extra commands for the Commodore 64/64C/128** user. These include a built-in DOS/Wedge, Easy Editor, and FLASHMON! machine language monitor.

1541 FLASH! C-64/C-64C & 1541	**$69.95***
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C-128 FLASH! C-128 & 1541	**$79.95***
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SX-64 FLASH! SX-64 & 1541	**$69.95***
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> ***A powerful panoply of pertinent, potent, peripheral products***

QUICKSILVER 128

QUICKSILVER 128 our premier IEEE-488 Interface for the **Commodore 128** is now in stock and even better than we had planned. **Quicksilver 128** offers an IEEE Interface for the **Commodore 128** in the C-128 mode (40 or 80 columns) and in the C-64 mode as well. **QUICKSILVER 128** will inter-connect your **Commodore 128** to Commodore SFD 1001, 2031, 2040, 3040, 4040, 8050, 8250, 9060, and 9090 Disk Drives. **QUICKSILVER 128** will connect your **Commodore 128** to Commodore 2022, 2023, 4022, 4023 and 8023 Printers.

QUICKSILVER 128 C-128	**$119.95***

> ***A priceless programmers pallett of practical products and programs***

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IEEE Flash! 64 our premier IEEE-488 Interface for the **Commodore 64** is now in stock and even more transparent (program compatible) than QUICKSILVER 64. **IEEE Flash! 64** will inter-connect your **Commodore 64** to Commodore SFD 1001, 2031, 2040, 3040, 4040, 8050, 8250, 9060, and 9090 Disk Drives. **IEEE Flash! 64** will connect your **Commodore 64** to Commodore 2022, 2023, 4022, 4023, and 8023 Printers.

IEEE Flash! 64 C-64/C-64C	**$99.95***

DRUM MACHINE

Rhythm King *is a drum machine for the C-64 and C-128.* **Rhythm King** is a disk and an audio output cartridge that plugs into your **C-64 or C-128.** Rhythm King has 8 different percussion sounds built-in and **Rhythm King** will play up to 3 drums at a time. You may write "patterns of up to 24 bars, with up to 32 notes per bar, with up to 64 steps per note. Up to 64 different patterns may be linked together into a "song", with up to 255 repeats per pattern. Songs may be linked together to form "Megasongs" of up to 255 pattern steps.

RHYTHM KING 128 C-128	**$89.95***
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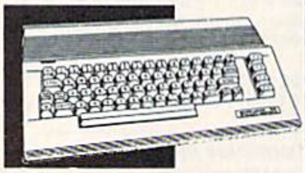

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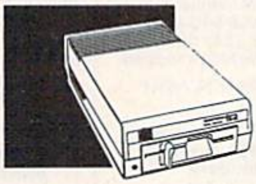

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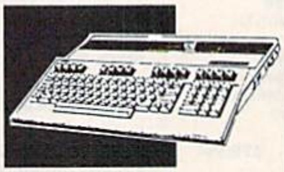

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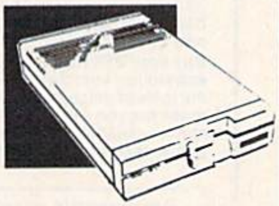

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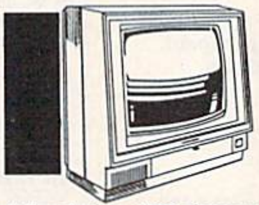

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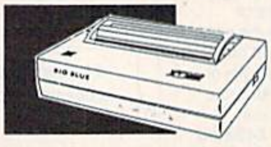

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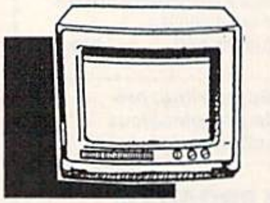

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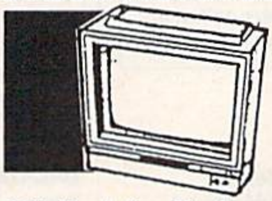

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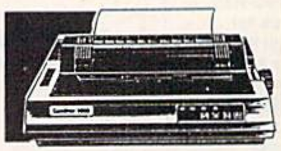

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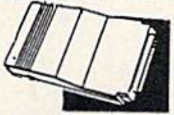

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From p. 12.

```
80 T$="1":FORY=1 TO LEN(R$):T$=T$+"0":NEXT
90 PRINTL$" "R$"/"T$" IN LOWEST TERMS IS:"
100 R=VAL(R$):T=VAL(T$)
110 FORZ=2 TO INT(T/2)
120 IFR/Z=INT(R/Z)AND T/Z=INT(T/Z) THEN R=R
    /Z:T=T/Z:Z=1E10
130 NEXT:IFZ=1E10 GOTO110
140 R$=STR$(R):T$=STR$(T):R$=RIGHT$(R$,LEN(
    R$)-1):T$=RIGHT$(T$,LEN(T$)-1)
150 PRINTL$" "R$"/"T$:RUN
```

Sister Anne Stremlau
Address unknown

$3B9 C-128 Unnew program—If you ever accidentally erase a program with the New command (a not uncommon occurrence—just wait till you do it yourself), you can restore it with the program below, which creates an Unnew program on disk as a machine language file. Insert the disk in the drive and type BOOT "%UNNEW" and hit return. If you have a graphic screen active at the time, type GRAPHIC1:GRAPHIC0 in Direct mode before booting %UNNEW. After you boot %UNNEW, your Basic program will be restored.

```
10 REM C-128 UNNEW-L. K. SNYDER
20 BANK 15:FORI=2816TO2833:READA:POKEI,A:NE
   XT
30 BSAVE"%UNNEW",B0,P2816TOP2834:END
40 DATA 165,45,133,251,165,46,133,252
50 DATA 160,0,169,1,145,251,32,229,94,96
```

L. K. Snyder
Address unknown

$3BA C-128 SYS in reverse—I found a reference to an undocumented C-128 keyword in my copy of the *C-128 Programmer's Reference Guide*. The keyword is RREG, for *R*ead *REG*isters, and it works much like the SYS command. You can "read" the results of the last SYS you called with RREG A,X,Y,S. This reads the values of the Accumulator, X register, Y register and the Status register into variables A, X, Y and S, respectively. You can use any variables you like and can read any register by substituting commas to skip the other registers. For example, to put the value of the Y register into variable YR, use the command RREG ,,YR. This makes it very easy to pass parameters with SYS and read the results back into variables.

Here's a practical example that gives the current window size. Use ESC T to set the top of a window and ESC B to set the bottom.

```
10 REM C-128 RREG -JIM BORDEN
20 BANK15:SYS65517:RREG ,X,Y
30 PRINT"WINDOW IS"X+1"COLUMNS WIDE"
40 PRINT"AND"Y+1"LINES HIGH."
```

See the next trick for another example.

Jim Borden
Carlisle, PA

$3BB From Hi-Res to Ultra Hi-Res—My program converts a 40-column hi-res picture to Ultra Hi-Res format. The original picture should be loaded in as a picture (use BLOAD"NAME",P8192 to load just the picture, and substitute P7168 in the BLoad command to load the picture and color) and then saved to disk with BSAVE "filename", B0, P8192 TO P16384. Then load and run the VIC/Ultra Hi-Res program.

The program converts the 320 × 200-pixel format of the VIC screen to the 640 × 200 format of the 80-column hi-res screen. In addition, the width is stretched in the process. This takes about five minutes in Fast mode. Now load the Ultra Hi-Res program and run it. You can then load your picture with @LOAD,0,"filename".

```
10 REM VIC=>U.H.RES-DANIEL MONTES
20 REM ML SUB BY JIM BORDEN
30 FAST:DIM A$(319)
40 FOR K=4864TO4904:READX:POKEK,X:NEXT
50 DATA 141,41,19,169,2,141,42,19,169,0,162
60 DATA 255,232,224,4,240,10,14,41,19,144,2
   46
70 DATA 29,37,19,176,241,72,206,42,19,208,2
   31
80 DATA 104,170,104,96,192,48,12,3
90 PRINT:INPUT"SOURCE FILENAME";S$
100 DOPEN#8,(S$+",P"):IF DSTHENPRINT:PRINTD
    S$:DCLOSE#8:GOTO90
110 PRINT:INPUT"ULTRA FILENAME ";T$
120 DOPEN#9,(T$+",P,W"):IF DSTHENPRINT:PRIN
    TDS$:DCLOSE#9:GOTO110
130 PRINT:PRINT"WORKING ON ROW:";
140 GET#8,C$,C$:FORF=1TO25:PRINTF;
150 FORI=0TO319:GET#8,A$(I):NEXT
160 FORJ=0TO7:FORI=JTOJ+312STEP8
170 A1=(ASC(A$(I)+CHR$(0)))
180 SYS4864,A1:RREG A1,X1
190 PRINT#9,CHR$(A1)CHR$(X1);
200 NEXT:NEXT:NEXT:DCLOSE:PRINTCHR$(7)
```

Daniel Montes
Cordoba, Argentina

$3BC Fastest Datafile 64—Since I've discovered the usefulness of Datafile and its peripheral programs (*RUN*, November and December 1984), I've gradually increased the number of applications. One of my databases contains 438 records, and sorting it before printing it out used to take 426 seconds. I found that if I compiled Datafile with a compiler such as Blitz!, the same sort took only 90 seconds!

Searches and file loads also execute faster. A typical 500-record search was cut from 18 seconds to 6 seconds, while loading the file was reduced from 120 seconds to about 80 seconds.

The beauty of Datafile is that it can be loaded and put into use before most commercial database programs get their first screen. Compiling it makes it even more beautiful!

Phil Hysell
Louisville, KY

$3BD Datafile Find option improvement—I've made some changes to Mike Konshak's excellent Datafile program so that you can use its Find option to locate a keyword anywhere within a field. The original Datafile only found a match at the beginning of a field. Make these changes to the program:

```
1 REM DATAFILE SUBSTRING FIND - KENNY LAWSON
```

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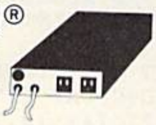

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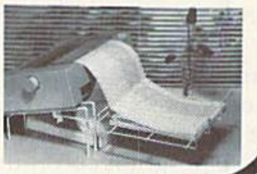

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Circle 155 on Reader Service card.

```
229 LT = LEN(T$)
231 FORQQ = 1TOLEN(REC$(K%(I),SF) - LT + 1)
232 IFT$ = MID$(REC$(K%(I),SF),QQ,LT)GOTO236
233 NEXT
```

The changes should work on any Commodore computer. However, if you're using a C-128 in 128 mode, you can use this line to replace all of the above lines:

```
232 IFINSTR(REC$(K%(I),SF),T$)GOTO236
```

Please note that this could be used as a Keyword Search subroutine in your own applications programs, also. Just be sure that your program uses the proper variable names.

Kenny Lawson
Indianapolis, IN

$3BE **Scroll control tip**—Memory location 214 always contains the physical screen line number of the cursor (0 to 24), and, in programming, it is a useful location for controlling loop output to the screen. For example, when PEEK (214) is equal to a line number you've chosen, branch to a routine that waits for the user to press a key, then clear the screen and continue output. You can use 214 only on the VIC and C-64. In C-128 mode, use location 235 and on the Plus/4, use location 205.

Joseph Charnetski
Dallas, PA

$3BF **C-64 great escape**—Have you ever been trapped in an input on your C-64, only to be forced to exit using the return key? Well, here's a better exit. Simply hold down the shift key, press the run-stop key and then quickly release the shift key. This is done with a sort of rolling motion. A note of caution: If you use a Datassette, make sure none of its buttons are depressed; otherwise it could cause a program to begin loading from the Datassette and ruin the program currently in memory.

David Hinkle
Nanty Glo, PA

$3C0 **C-64 letter catcher**—This game for the C-64 can sharpen your reflexes and typing skills, and you can have fun at the same time.

When you run the program, a randomly chosen letter appears at the bottom of the screen and moves slowly upward. If you press the corresponding key before the letter reaches the top, a point is added to your score and a new letter is chosen. The quicker your fingers fly, the more points you can get. The program increases speed a little after each letter. If you touch-type, you'll learn to type faster.

```
10 REM LETTER CATCHER - CHING KO
20 DT=100:S=0:CH=RND(-TI)
30 PRINTCHR$(147):CH=INT(RND(1)*26)+65
40 FORDE=1TO23:PRINT:NEXT
50 PRINT:PRINTTAB(INT(RND(1)*37)+2)CHR$(CH)
   ;:I=24
60 GETK$:IFK$<>CHR$(CH)GOTO90
70 PRINT CHR$(147):S=S+1:PRINTTAB(18);S
80 DT=DT-1:FORDE=1TO250:NEXT:GOTO30
90 FORDE=1TODT:NEXT
100 PRINT:IFI>0THENI=I-1:GOTO60
110 PRINTCHR$(147)"YOUR SCORE WAS";S:PRINT
120 PRINT"PRESS 'RETURN' TO PLAY AGAIN."
130 INPUT K$:IFK$=""GOTO20
```

Ching Ko
McPherson, KS

$3C1 **C-64 trace**—Debugging a Basic program is made easier with a trace utility. These utilities trace the execution of a program and display the line numbers. Most traces display the lines on the screen while the program is running. This can cause problems if your program prints to the screen, resulting in scrambled displays. Also, when listing a program to compare it with the trace, you can accidentally scroll the trace values right off the screen.

To overcome these annoyances, C-64 Trace stores all executed lines in memory (up to 2000 of them) while your program is running, and it allows the numbers to be recalled later as often as you wish. To use C-64 Trace, type SYS820 to turn it on, and then run your program. (Turning on the trace clears all previously saved line numbers.)

To display the executed lines and shut off the trace, type SYS916. The line list can be stopped at any time with the run-stop key. Also, if there's a For-Next loop on a line, rather than display the same line many times, C-64 Trace does it just once. Lines containing only REMs are also ignored.

```
1 REM C-64 TRACE UTILITY-RICHARD PENN
10 FORU=820TO990:READQ:POKEU,Q:C=C+Q:NEXT
15 IFC<>21791THENPRINT"DATA ENTRY ERROR!":S
   TOP
20 PRINT"{SHFT CLR}SYS820 - TRACE ON":PRINT
   "SYS916 - DISPLAY LINES":POKE179,4
100 DATA 169,77,141,10,3,169,3,141,11,3,169
    ,0,133,251,141,146,3,141,147
110 DATA 3,169,192,133,252,96,72,138,72,152
    ,72,8,165,157,201,0,208,36,160
120 DATA 0,165,57,166,58,205,146,3,208,8,23
    6,147,3,208,3,76,125,3,141
130 DATA 146,3,145,251,32,134,3,142,147,3,1
    38,145,251,32,134,3,40,104,168
140 DATA 104,170,104,76,134,174,230,251,165
    ,251,201,0,240,1,96,230,252,96,4
150 DATA 0,169,0,133,253,169,192,133,254,16
    0,0,165,253,197,251,208,6,165,254
160 DATA 197,252,240,30,169,13,32,210,255,1
    77,253,170,32,211,3,177,253,32,205
170 DATA 189,32,211,3,32,234,255,32,225,255
    ,240,3,76,156,3,169,134,141,10
180 DATA 3,169,174,141,11,3,96,230,253,165,
    253,201,0,240,1,96,230,254,96
```

Richard Penn
Montreal, Quebec, Canada

$3C2 **64 Auto Menu booter**—The Auto Menu program in the April 1986 issue of *RUN* is really great, and I use it on all my disks. However, if each program on the disk has the following lines as an Exit routine, the Auto Menu program can be loaded automatically and run.

```
10 REM AUTO MENU BOOTER-THOMAS W. O'DEA
62500 INPUT"DO YOU WANT TO RUN THE PROGRAM
      AGAIN{4 SPACEs}(Y/N){2 SPACEs}Y{3 CRS
      R LFs}";R$
```

Continued on p. 82.

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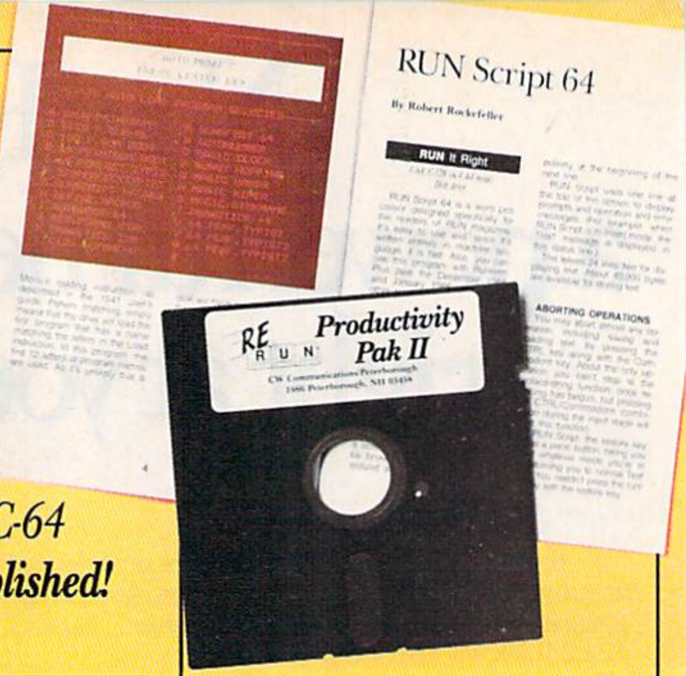

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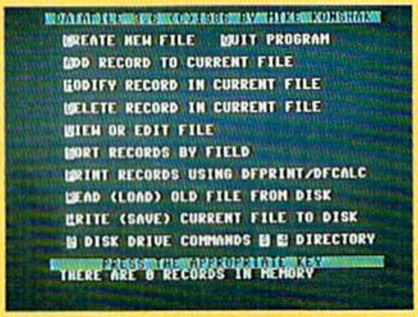

```
[illegible] BY MIKE KONSHAK
CREATE NEW FILE   QUIT PROGRAM
ADD RECORD TO CURRENT FILE
MODIFY RECORD IN CURRENT FILE
DELETE RECORD IN CURRENT FILE
VIEW OR EDIT FILE
SORT RECORDS BY FIELD
PRINT RECORDS USING DFPRINT/DFCALC
READ (LOAD) OLD FILE FROM DISK
WRITE (SAVE) CURRENT FILE TO DISK
@ DISK DRIVE COMMANDS [illegible] DIRECTORY
PRESS THE APPROPRIATE KEY
THERE ARE 0 RECORDS IN MEMORY
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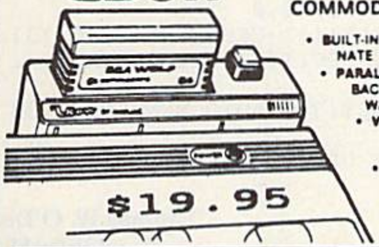

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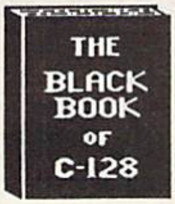

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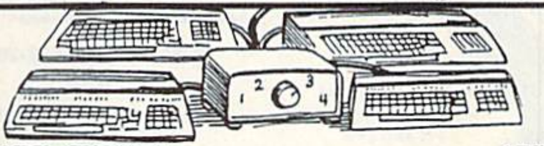

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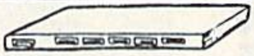

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From p. 78.

```
62510 IF R$="Y"THEN RUN
62520 IFR$<>"N"THENPRINT"{3 CRSR UPs}":GOTO
      62500
62530 POKE53281,1:POKE646,0
62540 PRINT"{SHFT CLR}{11 CRSR DNs}"SPC(13)
      "LOADING MENU"SPC(108)"PLEASE WAIT...
      "
62550 PRINT"LOAD"CHR$(34)"AUTO MENU"CHR$(34
      )",8"
62560 PRINT"{4 CRSR UPs}":POKE631,131:POKE1
      98,1:END
```

Thomas W. O'Dea
Randolph, MA

$3C3 **CalcAid 128/64**—CalcAid 64 (see *RUN*, November 1986) lets you view its seven-column spreadsheet only three columns at a time. Adding the lines below will give you full use of the C-128's 80-column mode so that you can view all seven columns at once and use the Fast mode. The C-128's function keys are redefined to the function key values for the C-64 (except that you cannot control the 80-column screen colors). Use CTRLX to end the program and restore your original function key definitions. The 40-column mode will also work, but, of course, CalcAid returns to the three-column display, and you must then use Slow mode.

```
2 REM CALCAID 64/128 - JIM BORDEN
3 REM CHANGES TO ALLOW 40/80 COL
6 PA=1:Z=0:P=100:SW=27:CW=2:IFFRE(0)=FRE(1)
  GOTO20
8 IFPEEK(215)THENSW=23:CW=6:SW$="{39 SPACEs
  }"
9 F9=1:FORCD=4096TO4113:POKE CD+238,PEEK(CD
  ):NEXT
10 FORCD=4096TO4113::READ R:POKE CD,R:NEXT
11 DATA 1,1,1,1,1,1,1,1,0,0:REM NEW F KEYS
12 DATA 133,137,134,138,135,139,136,140
70 IFG$=CHR$(29)THENIFC<SWTHENC=C+1:GOSUB10
   000:GOTO30
110 IFG$=CHR$(24)ANDF9=1THENFORCD=4096TO411
    3:POKE CD,PEEK(CD+238):NEXT:END
2160 C=VAL(MID$(IN$,2,2)):IFC>29-CWTHENC=29
     -CW
2162 IFASC(LEFT$(IN$,1))>70THENRD=6
2163 IFASC(LEFT$(IN$,1))<=70THENRD=ASC(LEFT
     $(IN$,1))-65
10010 PRINTCHR$(18);"{40 SPACEs}"SW$
10015 IFZ=1THENPRINTTAB(5);CT;TAB(16);C+1;T
      AB(27);C+2:GOTO10020
10019 PRINTTAB(5);C;TAB(16);C+1;TAB(27);C+2

10020 IFCW>2THENPRINT"{CRSR UP}"TAB(38);C+3
      ;TAB(49);C+4;TAB(60);C+5;TAB(71)C+6
10023 FORR=1TOCW:PRINTTAB(2+11*R);DA$(RD,C+
      R);:NEXT
10024 PRINT
10027 FORR=1TOCW:PRINTTAB(2+11*R);DA$(RT,C+
      R);:NEXT
10028 PRINT
10060 FORRR=1TOCW:PRINTTAB(2+11*RR);DA$(R,C
      +RR);:NEXT
10070 PRINT
```

Jim Borden
Carlisle, PA

$3C4 **C-64 blocks free**—If you'd like to know how many blocks remain free on a disk without listing the entire directory, simply enter LOAD"$$",8. Then list the "program." The result will display the blocks free on the disk but not the directory. You'll have to load a program (or a complete directory) before trying this trick again, otherwise a File Not Found error will result.

R. V. Taylor
Little Rock, AR

$3C5 **C-64 On-Else**—To check single-character entries for accuracy, I use a seldom-seen Basic command—On X Goto. You can use it much like If-Then-Else, which Basic 2.0 does not have. Here's a short program to show how it works.

```
10 PRINT"{SHFT CLR} TRY AGAIN? (Y/N)"
20 GET A$:IFA$=""GOTO20
30 ON-((A$="Y")+2*(A$="N"))GOTO 100,200:GOT
   O10
40 :END
100 PRINT"YES":END
200 PRINT"NO"
```

Line 30 allows the computer's logic to make the comparisons. If a comparison is true (e.g., A$ = "Y"), the computer will have a negative integer as the result (– 1 in this example). If none of the comparisons match, the result will be a zero, which the computer's logic considers to be false.

Since only one can be true, the result in this short program would be 0 (none true), – 1 if A$ = "Y" or – 2 if A$ = "N". The minus sign after ON will change the sign to a positive number that ON can handle. If the value is 1, then the first Goto (100) branch is taken; if the value is 2, the program goes to 200; if the value is 0, then the statement *after* all line numbers is executed (the ELSE part), which, in this case, sends the program for another character.

Paul N. Lacey
Pickerington, OH

$3C6 **Numbers vs. variables**—Placing a number (such as .006347582) or a variable (N) equal to the number inside a For-Next loop can make an amazing difference in a Basic program's execution time. Try the program below, and note the time, in jiffies, used by the program.

```
10 Z = TI:X = 1:N = .006347582
20 FOR T = 1TO1000
30 X = X + .006347582
40 NEXT:PRINT "X = "X:PRINT TI – Z"JIFFIES."
```

Now change line 30:

```
30 X = X + N
```

and run the program, again noting the time in jiffies.

Although the only difference between the two programs is line 30 (using a number versus using a variable), the second version runs almost eight times faster. So, if you use a number more than a few times in a program, assign it to a variable instead.

Gary Robertshaw
Atascadero, CA ■

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From p. 43.

```
604 POKE54276,33:FORE=1TO100:NEX
    T:POKE54276,16:RETURN
                         :REM*110
1500 REM DFPRINT 1.7 FOR DATAFIL
     E (C)1983-1986 BY MIKE KONS
     HAK                 :REM*213
1502 CLR:PRINT"{SHFT CLR}{CTRL 8
     }":POKE53281,0:POKE53280,0:
     OPEN4,4:OPEN3,3      :REM*37
1504 D$="":B$=CHR$(32):FORJ=1TO8
     0:S$=S$+B$:NEXTJ:PF=4:MF$=D
     $:RF$=D$:P=0        :REM*231
1506 NC=0:NL=0:PL=0:F1=0:F2=0:F3
     =0:L$=D$:RL=0:SB$=D$:CR$=CH
     R$(13)              :REM*147
1508 A$=D$:C$=D$:T%=6:I=0:J=0:K=
     0:M=0:N=0:RW=5:SF=0:Z=0:E$=
     "EOF"                :REM*43
1510 EN=0:EM$=D$:ET=0:ES=0:A1$=D
     $:A2$=D$:A3$=D$:RW=5:LW=34:
     LT=1:L=0             :REM*59
1512 REM-ARRAYS           :REM*39
1514 DIM ML$(17,4),PC(18),TT$(5)
     ,HC$(17),RP$(17,4),LP(5),R$
     (5)                  :REM*43
1516 DIM F$(31),T%(31),L%(31),RE
     C$(31)              :REM*215
1518 LP(1)=1:LP(2)=37:LP(3)=73:L
     P(4)=109:GOTO1530   :REM*201
1520 REM-GET             :REM*207
1521 PRINT"{CTRL 8}{CRSR DN} {CT
     RL 9}{6 SPACEs}PRESS THE AP
     PROPRIATE KEY{7 SPACEs}":RE
     TURN                :REM*108
1522 GETA$:IFA$=""THEN1522
                         :REM*241
1524 RETURN               :REM*51
1526 REM-START            :REM*49
1528 PRINT"{SHFT CLR} {CTRL 9}{6
      SPACEs}DATAFILE FAST PRINT
      PROGRAM{5 SPACEs}":GOTO154
     8                   :REM*249
1530 PRINT"{SHFT CLR} {CTRL 9}{6
      SPACEs}DATAFILE FAST PRINT
      REV 1.7{5 SPACEs}" :REM*31
1532 PRINT" {CTRL 9}{8 SPACEs}BY
      MIKE KONSHAK (C)1986{7 SPA
     CEs}"                :REM*63
1534 PRINT"{COMD 6}{CRSR DN} THI
     S PROGRAM WILL FORMAT AND P
     RINT A"              :REM*71
1536 PRINT" {CTRL 9}SEQ{CTRL 0}
     FILE, WHICH WAS PREVIOUSLY
     CREATED"             :REM*16
1539 PRINT" BY {CTRL 8}{CTRL 9}D
     ATAFILE{COMD 6}{CTRL 0}, DI
     RECTLY FROM THE DISK"
                          :REM*33
1540 PRINT" TO THE PRINTER.{2 SP
     ACEs}THE ORDER OF THE"
                          :REM*42
1542 PRINT" RECORDS WILL BE THE
     SAME AS THE MOST"    :REM*38
1544 PRINT" RECENT SORT AS WRITT
     EN IN THE CURRENT" :REM*114
1546 PRINT" FILE.":PRINT"{CTRL 8
     }{CRSR DN} PRESS {CTRL 2}{C
     TRL 9}ANY KEY{CTRL 0}{CTRL
     8} TO CONTINUE"     :REM*170
1547 GOSUB1522:GOSUB2856:GOTO152
     8                   :REM*177
1548 PRINTTAB(5)"{CRSR DN}{CTRL
     9}{CTRL 2}O{COMD 6}{CTRL 0}
     PEN RECORD FILE ON DISK"
                         :REM*172
1550 IFFL>0THENPRINTTAB(5)"{CRSR
      DN}{CTRL 9}{CTRL 2}R{COMD
     6}{CTRL 0}EPEAT RECORD FILE
     : {CTRL 0}{CTRL 2}"NF$"{CTR
     L 8}{CTRL 0}"       :REM*182
1551 PRINTTAB(5)"{CRSR DN}{CTRL
     9}{CTRL 2}${COMD 6}{CTRL 0}
      DISK DIRECTORY {CTRL 9}{CT
     RL 2}4{COMD 6}{CTRL 0}"
                         :REM*203
1552 PRINTTAB(5)"{CRSR DN}{CTRL
     9}{CTRL 2}Q{COMD 6}{CTRL 0}
     UIT PROGRAM"        :REM*252
1553 PRINT"{CRSR DN} TRANSFER TO
     :"                   :REM*95
1554 PRINTTAB(5)"{CRSR DN}{CTRL
     9}{CTRL 2}D{COMD 6}{CTRL 0}
      DATAFILE DBMS"      :REM*12
1555 PRINTTAB(5)"{CRSR DN}{CTRL
     9}{CTRL 2}C{COMD 6}{CTRL 0}
      DFCALC CALCULATED REPORTS"
                         :REM*219
1556 GOSUB1521           :REM*192
1558 GOSUB1522:IFA$="$"ORA$="4"T
     HENGOSUB1628:GOTO1528
                         :REM*254
1559 IFA$="D"THENPRINT"{SHFT CLR
     }{CTRL 1}LOAD"CHR$(34)"DATA
     FILE"CHR$(34)",8":GOTO1565
                         :REM*159
1560 IFA$="O"THENFL=1:GOTO1572
                         :REM*186
1561 IFA$="C"THENPRINT"{SHFT CLR
     }{CTRL 1}LOAD"CHR$(34)"DFCA
     LC"CHR$(34)",8":GOTO1565
                         :REM*181
1562 IFA$="R"THEN1584    :REM*140
1563 IFA$="Q"THENCLOSE5:CLOSE15:
     CLOSE3:CLOSE4:END   :REM*213
1564 GOSUB602:GOTO1558   :REM*216
1565 PRINT:PRINT:PRINT:PRINT:PRI
     NT"RUN{CTRL 8}"      :REM*29
1566 POKE631,19:POKE632,13:POKE6
     33,13:POKE634,13:POKE635,13
     :POKE636,13         :REM*218
1568 POKE198,6:NEW:END    :REM*62
1570 REM-FILE NAME        :REM*68
1572 PRINT"{COMD 6}{SHFT CLR} AV
     AILABLE RECORD FILES ARE:{C
     RSR DN}{CTRL 8}":@"$0:DF]*"
                         :REM*188
1573 PRINT"{CRSR DN}{COMD 6}NAME
      OF RECORD FILE TO BE PRINT
     ED{CTRL 8}"          :REM*25
1574 PRINT" {CRSR DN}{2 SPACEs}"
     ;NF$:INPUT"{CRSR UP} ";NF$:
     IFNF$=""THENFL=0:GOTO1528
                         :REM*162
1576 OPEN15,8,15         :REM*208
1578 OPEN5,8,5,"0:DF] "+NF$+",S,
     R":GOSUB1618:IFEN=62THENGOS
     UB1620:FL=0:GOTO1528
                         :REM*136
1579 INPUT#5,R,F,X:GOSUB1618:IFE
     T=8THEN1528{30 SPACEs}
                         :REM*213
1580 FORN=1TOF:INPUT#5,F$(N),L%(
     N):NEXTN:GOSUB1618:IFET=8TH
     EN1528{8 SPACEs}     :REM*94
1582 CLOSE5:CLOSE15{54 SPACEs}
                         :REM*254
1583 REM-PRINT MENU      :REM*115
1584 PRINT"{CTRL 8}{SHFT CLR} {C
     TRL 9}{8 SPACEs}RECORD PRIN
     TOUT MENU{10 SPACEs}"
                          :REM*44
1585 PRINT"{COMD 6}{CRSR DN} PRI
     NT OPTIONS:";:IFK<>0THENPRI
     NT:GOTO1587           :REM*5
1586 PRINT"{COMD 3}NO FORMATS PR
     ESENT{CTRL 8}"{41 SPACEs}
                          :REM*44
1587 PRINTTAB(4)"{CRSR DN}{CTRL
     9}{CTRL 2}U{COMD 6}{CTRL 0}
     NFORMATTED LIST"     :REM*55
1588 PRINTTAB(4)"{CRSR DN}{CTRL
     9}{CTRL 2}R{COMD 6}{CTRL 0}
     EPORT FORMAT{2 SPACEs}{CTRL
      9}{CTRL 8}"RF$     :REM*132
1590 PRINTTAB(4)"{CRSR DN}{CTRL
     9}{CTRL 2}M{COMD 6}{CTRL 0}
     AILING LABELS {CTRL 9}{CTRL
      8}"MF$              :REM*18
1591 PRINT"{2 CRSR DNs}{COMD 6}
     CONFIGURE:"         :REM*235
1592 PRINTTAB(4)"{CRSR DN}{CTRL
     9}{CTRL 2}L{COMD 6}{CTRL 0}
     ABELS:{CTRL 8}"RW"{COMD 6}R
     OWS,{CTRL 8}"LW"{COMD 6}CHR
     S,{CTRL 8}"LT"{COMD 6}ACROS
     S"                  :REM*144
1594 PRINTTAB(4)"{CRSR DN}{CTRL
     9}{CTRL 2}P{COMD 6}{CTRL 0}
     RINTER: OPTION{CTRL 8}"P;:I
     FP=4THENPRINT"{2 CRSR LFs}{
     CTRL 9}SCREEN{CTRL 0}";
                         :REM*120
1595 PRINT:PRINTTAB(4)"{CRSR DN}
     {CTRL 9}{CTRL 2}${COMD 6}{C
     TRL 0} DISK DIRECTORY {CTRL
      9}{CTRL 2}4{COMD 6}{CTRL 0
     }"                   :REM*17
1596 PRINTTAB(4)"{CRSR DN}{CTRL
     9}{CTRL 2}E{COMD 6}{CTRL 0}
     XIT TO RESTART"      :REM*14
1598 GOSUB1521           :REM*234
1600 GOSUB1522:IFA$="" THEN1600
                         :REM*188
1602 IFA$="U"THENK=1:GOTO1730
                          :REM*52
1604 IFA$="R"THENK=2:GOTO3118
                         :REM*222
1605 IFA$="$"ORA$="4"THENGOSUB16
     28:GOTO1584         :REM*199
1606 IFA$="E"THEN1528     :REM*82
1608 IFA$="M"THENK=3:GOTO3118
                         :REM*110
1610 IFA$="L"THEN1940     :REM*24
1612 IFA$="P"THENGOSUB2856:GOTO1
```

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```
    584                     :REM*168
1614 GOSUB602:GOTO1600      :REM*184
1616 REM-DISK ERROR         :REM*186
1618 INPUT#15,EN,EM$,ET,ES:IF(EN
    <20)OR(EN=62)THENET=0:RETUR
    N                       :REM*254
1620 PRINT"{CRSR DN} {CTRL 9}{CO
    MD 3}DISK ERROR{CTRL 0}"EN"
    {CRSR LF}, "EM$","ET"{CRSR
    LF},"ES"{CTRL 8}":ET=8
                             :REM*40
1622 PRINT"{CRSR DN}{COMD 6} PRE
    SS {CTRL 2}{CTRL 9}ANY KEY{
    COMD 6}{CTRL 0} TO RESTART
    PROGRAM{CTRL 8}"        :REM*212
1624 GOSUB1522:CLOSE5:CLOSE15:RE
    TURN                    :REM*234
1626 REM-DIRECTORY          :REM*254
1628 PRINT"{SHFT CLR}{CTRL 8}";:
    @"$":PRINTTAB(25)"{COMD 6}P
    RESS {CTRL 2}{CTRL 9}ANY KE
    Y{CTRL 8}{CTRL 0}":GOSUB152
    2:RETURN                 :REM*74
1666 REM-LOAD REPORT        :REM*152
1668 PRINT"{COMD 6}{SHFT CLR} AV
    AILABLE REPORT FILES ARE{CT
    RL 8}:{CRSR DN}":@"$0:RP]*"
                            :REM*156
1669 PRINT"{CRSR DN}{COMD 6} NAM
    E OF REPORT FORMAT FILE?{CT
    RL 8}"                  :REM*187
1670 PRINT" {CRSR DN}{2 SPACEs}{
    CTRL 8}";NF$:INPUT"{CRSR UP
    } ";RF$:IFRF$=""THEN1528
                             :REM*38
1672 OPEN15,8,15:OPEN5,8,5,"0:RP
    ] "+RF$+",S,R":GOSUB1618:IF
    ET=8THEN1528             :REM*84
1674 IFEN=62THENGOSUB1620:GOTO15
    28                      :REM*166
1676 INPUT#5,PW,NL,NC:GOSUB1618:
    IFET=8THEN1528          :REM*194
1678 FORJ=1TONL             :REM*220
1680 INPUT#5,TT$(J):GOSUB1618:IF
    ET=8THEN1528            :REM*196
1682 NEXTJ                  :REM*244
1684 FORI=1TONC             :REM*210
1686 INPUT#5,PC(I),HC$(I):GOSUB1
    618:IFET=8THEN1528       :REM*14
1688 FORN=1TO3               :REM*44
1690 INPUT#5,RP$(I,N):GOSUB1618:
    IFET=8THEN1528{27 SPACEs}
                            :REM*124
1692 NEXTN:NEXTI:INPUT#5,A1$:Z=V
    AL(A1$)                  :REM*72
1694 S=ST:IFS<>0THEN1698:REM*162
1696 INPUT#5,E$             :REM*214
1698 CLOSE5:CLOSE15         :REM*114
1700 GOTO2980                :REM*10
1702 REM-LOAD LABEL          :REM*58
1704 PRINT"{COMD 6}{SHFT CLR} AV
    AILABLE LABEL FILES ARE:{CT
    RL 8}{CRSR DN}":@"$0:ML]*"
                             :REM*12
1705 PRINT"{COMD 6}{CRSR DN} NAM
    E OF MAILING LABEL FORMAT F
    ILE?"                   :REM*173
1706 PRINT" {CRSR DN}{2 SPACEs}{
    CTRL 8}";NF$:INPUT"{CRSR UP
    } ";MF$:IFMF$=""THEN1528
                            :REM*150
1708 OPEN15,8,15:OPEN5,8,5,"0:ML
    ] "+MF$+",S,R":GOSUB1618:IF
    ET=8THEN1528            :REM*176
1710 IFEN=62THENGOSUB1620:GOTO15
    28                      :REM*202
1712 INPUT#5,RW              :REM*84
1714 FORI=1TORW:FORN=1TO3 :REM*8
1716 INPUT#5,ML$(I,N):GOSUB1618:
    IFET=8THEN1528          :REM*246
1718 NEXTN                   :REM*56
1720 NEXTI                   :REM*18
1722 S=ST:IFS<>0THEN1726:REM*122
1724 INPUT#5,E$             :REM*242
1726 CLOSE5:CLOSE15:GOTO3068
                            :REM*150
1728 REM-OPEN FILE           :REM*26
1730 PRINT"{SHFT CLR} POSITIONIN
    G DRIVE..."             :REM*250
1731 OPEN15,8,15:OPEN5,8,5,"0:DF
    ] "+NF$+",S,R":GOSUB1618:IF
    ET=8THEN1528{2 SPACEs}
                             :REM*43
1732 IFEN=62THENGOSUB1620:GOTO15
    28                      :REM*224
1734 INPUT#5,R,F,X:GOSUB1618:IFE
    T=8THEN1528             :REM*112
1738 FORN=1TOF:INPUT#5,F$(N),L%(
    N):NEXTN:GOSUB1618:IFET=8TH
    EN1528                  :REM*252
1740 REM-OPTIONS            :REM*108
1742 A0=0:PG=1:PL=0:L=0:PRINT"{S
    HFT CLR} {CTRL 8}{CTRL 9}{1
    1 SPACEs}PRINT OPTIONS MENU
    {8 SPACEs}"              :REM*26
1743 PRINT"{CRSR DN}{COMD 6} THE
    RE ARE {CTRL 8}{CTRL 9}"X"{
    CTRL 0}{COMD 6}RECORDS IN {
    CTRL 9}{CTRL 8}"NF$ :REM*83
1744 PRINTTAB(4)"{CRSR DN}{CTRL
    9}{CTRL 2}A{COMD 6}{CTRL 0}
    LL RECORDS IN FILE :REM*152
1746 PRINTTAB(4)"{CRSR DN}{CTRL
    9}{CTRL 2}F{COMD 6}{CTRL 0}
    IND RECORDS WITH COMMON FIE
    LDS                     :REM*222
1748 IFK=3ANDPF=4THENPRINTTAB(4)
    "{CRSR DN}{CTRL 9}{CTRL 2}T
    {COMD 6}{CTRL 0}EST LABEL(S
    )"                       :REM*28
1750 PRINTTAB(4)"{CRSR DN}{CTRL
    9}{CTRL 2}E{COMD 6}{CTRL 0}
    XIT BACK TO START"   :REM*30
1752 IFK=2THENPRINT"{CRSR DN}{CO
    MD 6}POSITION PAPER IN PRIN
    TER AT TOP OF PAGE" :REM*18
1754 GOSUB1521              :REM*134
1756 GOSUB1522              :REM*200
1758 IFA$="A"THEN1806       :REM*158
1762 IFA$="T"THEN1918       :REM*134
1764 IFA$="F"THEN1772        :REM*16
1766 IFA$="E"THENCLOSE5:CLOSE15:
    GOTO3118                :REM*226
1768 GOSUB602:GOTO1756      :REM*152
1770 REM-FIND               :REM*220
1772 PRINT"{CTRL 8}{SHFT CLR} {C
    TRL 9}{4 SPACEs}FIND RECORD
    S WITH COMMON ITEMS{4 SPACE
    s}{CRSR DN}"            :REM*208
1774 FORN=1TOF:PRINT" {CTRL 9}{C
    TRL 2}";N;"{COMD 6}{CTRL 0}
     ";F$(N):NEXTN          :REM*154
1776 INPUT"{CRSR DN} WHICH FIELD
     IS TO BE SEARCHED";SF
                             :REM*26
1778 IFSF<0ORSF>FTHENPRINT"{3 CR
    SR UPs}":GOTO1776        :REM*66
1780 PRINT"{COMD 6} ENTER {CTRL
    9}{CTRL 2}COMMON ITEM{COMD
    6}{CTRL 0} ":PRINT" (THE EN
    TIRE STRING IS NOT REQUIRED
    )"                        :REM*6
1782 PRINT" {CTRL 9}";F$(SF);"{C
    TRL 8}{CTRL 0} ";:INPUTT$
                             :REM*18
1784 PRINT"{SHFT CLR}":IFK=2THEN
    GOSUB1838:GOSUB1852:REM*200
1786 FORI=1TOX              :REM*248
1788 IFP<>4THENPRINT" {CRSR DN}S
    EARCHING RECORD";I;"{2 CRSR
     UPs}"{25 SPACEs}   :REM*196
1790 FORN=1TOF:INPUT#5,REC$(N):I
    FREC$(N)=">"THENREC$(N)=" "
                            :REM*244
1791 NEXTN:GOSUB1618:IFET=8THEN1
```

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Listing 1 continued.

```
     528                     :REM*191
1792 IFT$=LEFT$(REC$(SF),LEN(T$)
     )THENONKGOSUB1826,1870,1928
     :IFK=2THENGOSUB1904 :REM*81
1796 NEXTI                   :REM*95
1797 IFL>0ANDK=3THENGOSUB1936
                             :REM*150
1798 CLOSE5:CLOSE15          :REM*215
1800 IFK=2THEN1906           :REM*253
1801 IFP=4THENPRINT"{COMD 6}PRES
     S {CTRL 2}{CTRL 9}ANY KEY{C
     TRL 8}{CTRL 0}":GOSUB1522
                             :REM*106
1802 GOTO1730                :REM*167
1804 REM-PRINT ALL           :REM*239
1806 GOSUB2898:PL=0:PRINT"{SHFT
     CLR}{CTRL 8}":IFP<>4ANDK=2T
     HENPRINT"{SHFT CLR}{CRSR DN
     } PRINTING HEADING" :REM*79
1807 IFK=2THENGOSUB1838:GOSUB185
     2                        :REM*72
1808 FORI=STOX:IFP<>4THENPRINT"{
     CRSR UP} READING RECORD #"S
     TR$(I)" OF"STR$(X){4 SPACEs
     }                        :REM*85
1810 FORN=1TOF:INPUT#5,REC$(N):I
     FREC$(N)=">"THENREC$(N)=" "
                              :REM*9
1811 NEXTN:GOSUB1618:IFET=8THEN1
     528                     :REM*212
1812 ONKGOSUB1826,1870,1928
                             :REM*145
1814 IFK=2THENGOSUB1904 :REM*205
1816 NEXTI                   :REM*115
1818 CLOSE5:CLOSE15          :REM*235
1820 IFK=2THEN1906            :REM*17
1822 GOTO1801                :REM*171
1824 REM-NONFORMATTED        :REM*205
1826 PRINT#PF,"[ RECORD #";I;"{3
      SPACEs}]";:FORJ=1TO61:PRIN
     T#PF,"-";:NEXTJ:GOSUB2888
                              :REM*93
1828 PL=PL+1:FORN=1TOF        :REM*45
1830 PRINT#PF,F$(N);:FORJ=1TO20-
     LEN(F$(N)):PRINT#PF,".";:NE
     XTJ                      :REM*35
1831 IFREC$(N)=">"THENREC$(N)="
     "                        :REM*74
1832 PRINT#PF,REC$(N):PL=PL+1:NE
     XTN:GOSUB2888:PL=PL+1
                              :REM*43
1834 IFPL+F<=60THENRETURN
                             :REM*107
1835 FORJ=1TO65-PL:GOSUB2888:NEX
     TJ:PL=0:PG=PG+1:PRINT#PF,"P
     AGE"PG:RETURN           :REM*130
1836 REM-TITLE               :REM*205
1838 FORJ=1TONL:IFTT$(J)<>">"THE
     NGOSUB1846{31 SPACEs}
                              :REM*33
1842 NEXTJ:RETURN             :REM*11
1846 B=INT((PW-LEN(TT$(J)))/2):I
     FP<>1THEN1849            :REM*17
1848 PRINT#PF,LEFT$(S$,B)+TT$(J)
     ;B1$;:PL=PL+1:RETURN
                             :REM*239
1849 PRINT#PF,LEFT$(S$,B)+TT$(J)
     ;B1$:PL=PL+1:RETURN:REM*232
1850 REM-HEADINGS             :REM*37
1852 GOSUB1866:PC(NC+1)=PW+3:CW=
     PC(2)-2-PC(1):IFPC(1)>1THEN
     1856                    :REM*115
1854 PRINT#PF,LEFT$(HC$(1),CW);:
     GOTO1858                :REM*231
1856 PRINT#PF,LEFT$(S$,PC(1)-1)+
     LEFT$(HC$(1),CW);  :REM*227
1858 IFNC=1THEN1862          :REM*159
1859 FORJ=2TONC:M=PC(J)-LEN(LEFT
     $(HC$(J-1),PC(J)-2-PC(J-1))
     )-PC(J-1)               :REM*240
1860 PRINT#PF,LEFT$(S$,M)+LEFT$(
     HC$(J),PC(J+1)-2-PC(J));
                             :REM*129
1861 NEXTJ                   :REM*168
1862 GOSUB2888:GOSUB1866:PL=PL+3
     :RETURN                  :REM*47
1864 REM-DASHES               :REM*71
1866 FORJ=1TOPW:PRINT#PF,"-";:NE
     XTJ:GOSUB2888:RETURN:REM*69
1868 REM-DATA                 :REM*29
1870 F1=VAL(RP$(1,1)):F2=VAL(RP$
     (1,2)):F3=VAL(RP$(1,3)):CW=
     PC(2)-2-PC(1)            :REM*83
1871 IFNC=1ANDZ=1THENCLM$=REC$(V
     AL(RP$(1,1))):GOSUB3148:GOT
     O1896                   :REM*158
1872 IFPC(1)>1THEN1878  :REM*213
1874 PRINT#PF,LEFT$(REC$(F1)+B$+
     REC$(F2)+B$+REC$(F3),CW);
                              :REM*67
1876 GOTO1882                 :REM*35
1878 PRINT#PF,LEFT$(S$,PC(1)-1);
                             :REM*229
1880 PRINT#PF,LEFT$(REC$(F1)+B$+
     REC$(F2)+B$+REC$(F3),CW);
                              :REM*73
1882 IFNC=1THEN1896          :REM*227
1883 FORJ=2TONC:CW=PC(J)-2-PC(J-
     1)                       :REM*76
1884 F1=VAL(RP$(J-1,1)):F2=VAL(R
     P$(J-1,2)):F3=VAL(RP$(J-1,3
     ))                       :REM*83
1886 M=LEN(LEFT$(REC$(F1)+B$+REC
     $(F2)+B$+REC$(F3),CW))
                             :REM*109
1888 M=PC(J)-M-PC(J-1):CW=PC(J+1
     )-2-PC(J)               :REM*179
1890 PRINT#PF,LEFT$(S$,M);
                              :REM*45
1891 IFJ=NCANDZ=1THENCLM$=REC$(V
     AL(RP$(J,1))):GOSUB3148:GOT
     O1896                    :REM*18
1892 F1=VAL(RP$(J,1)):F2=VAL(RP$
     (J,2)):F3=VAL(RP$(J,3)){18
     SPACEs}                 :REM*191
1894 PRINT#PF,LEFT$(REC$(F1)+B$+
     REC$(F2)+B$+REC$(F3),CW);
                              :REM*87
1895 NEXTJ                   :REM*202
1896 GOSUB2888:PL=PL+1  :REM*137
1898 IFPL=60THENFORJ=1TO5:GOSUB2
     888:NEXTJ:PL=0:GOTO1901{18
     SPACEs}                 :REM*205
1900 RETURN                  :REM*173
1901 PG=PG+1:PRINT#PF,"PAGE"PG:G
     OSUB1852:RETURN          :REM*42
1902 REM-SUM                  :REM*81
1904 IFZ<>1THENRETURN   :REM*151
1905 A0=A0+VAL(REC$(VAL(RP$(NC,1
     )))):RETURN{30 SPACEs}
                              :REM*54
1906 IFZ<>1THEN1914           :REM*21
1908 PRINT#PF,LEFT$(S$,PC(NC)-1)
     ;                        :REM*17
1910 FORI=1TOPW-PC(NC)+1:PRINT#P
     F,"-";:NEXTI:GOSUB2888
                             :REM*235
1911 IFNC=1THEN1913          :REM*202
1912 PRINT#PF,LEFT$(S$,PC(NC)-9)
     +"TOTAL={2 SPACEs}";:REM*75
1913 CLM$=STR$(A0):GOSUB3148:PL=
     PL+2                     :REM*52
1914 GOSUB2888:IFPF=4THENFORI=1T
     O66-PL:GOSUB2888:NEXTI
                              :REM*11
1915 GOTO1801                  :REM*8
1916 REM-TEST                 :REM*23
1918 PRINT"{CRSR DN} PRINTING TE
     ST LABEL"               :REM*191
1920 FORI=1TORW:FORJ=1TOLW:PRINT
     #PF,RIGHT$(STR$(J),1);:NEXT
     J:GOSUB2888:NEXTI   :REM*63
1922 FORI=1TOT%-RW:GOSUB2888:NEX
     TI                       :REM*55
1924 GOTO1742                :REM*193
1926 REM-LABELS               :REM*69
1928 L=L+1:FORJ=1TORW:F1=VAL(ML$
     (J,1)):F2=VAL(ML$(J,2)):F3=
     VAL(ML$(J,3))       :REM*135
1930 RW$(J)=RW$(J)+LEFT$(REC$(F1
     )+B$+REC$(F2)+B$+REC$(F3)+S
     $,LW)+B$+B$:NEXTJ   :REM*59
1932 IFI>=XTHEN1936          :REM*137
1934 IFL<>LTTHENRETURN  :REM*155
1936 FORJ=1TORW:PRINT#PF,LEFT$(R
     W$(J),LP(LT)+LW-1):RW$(J)="
     ":NEXTJ                 :REM*185
1937 FORS=1TOT%-RW:GOSUB2888:NEX
     TS:L=0:RETURN           :REM*204
1938 REM-LABEL SIZE          :REM*157
1940 PRINT"{SHFT CLR}{CTRL 8} {C
     TRL 9}{13 SPACEs}LABEL SIZE
     {15 SPACEs}{CTRL 0}"
                             :REM*235
1941 PRINT"{COMD 6} {CTRL 9}CURR
     ENTLY:{CTRL 8}"RW"{COMD 6}{
     CRSR LF} ROWS,{CTRL 8}"LW"{
     COMD 6}{CRSR LF} CHRS,{CTRL
      8}"LT"{COMD 6}{CRSR LF} AC
     ROSS {CTRL 8}"           :REM*50
1942 PRINTTAB(3)"{CRSR DN}{CTRL
     9}{CTRL 2}S{COMD 6}{CTRL 0}
     TANDARD - 5 ROWS, 34 CHRS,
     1 UP"                    :REM*95
1944 PRINTTAB(5)"15/16 INCH BY 3
      1/2 INCHES"            :REM*131
1946 PRINTTAB(3)"{CRSR DN}{CTRL
     9}{CTRL 2}L{COMD 6}{CTRL 0}
     ARGE{4 SPACEs}- 8 ROWS, 34
     CHRS, 1 UP"             :REM*253
1948 PRINTTAB(5)"1 7/16 INCH BY
     3 1/2 INCHES"           :REM*115
1950 PRINTTAB(3)"{CRSR DN}{CTRL
     9}{CTRL 2}C{COMD 6}{CTRL 0}
     HANGE LABEL SIZE AND TYPE"
                              :REM*33
1953 PRINTTAB(3)"{2 CRSR DNs}{CT
     RL 9}{CTRL 2}E{COMD 6}{CTRL
      0}XIT"                  :REM*72
1954 PRINT"{2 CRSR DNs} NOTE: LA
     BELS ARE SEPARATED BY ONE R
     OW"                     :REM*217
1956 PRINTTAB(7)"AND 2 CHARACTER
     S"                      :REM*253
1958 GOSUB1521                :REM*83
1960 GOSUB1522:IFA$="E"THEN1584
                              :REM*43
1962 IFA$="S"THENT%=6:RW=5:LW=34
     :GOTO1940                :REM*33
1964 IFA$="L"THENT%=9:RW=8:LW=34
     :GOTO1940                :REM*13
1966 IFA$="C"THEN1968         :REM*27
1967 GOSUB602:GOTO1960        :REM*56
1968 PRINT"{COMD 6}{CRSR DN} NUM
     BER OF ROWS ON LABEL{CTRL 8
     }?"RW                   :REM*109
1969 PRINT"{CRSR UP}"TAB(24);:IN
     PUTRW:T%=RW+1           :REM*124
1970 PRINT"{COMD 6} # OF CHARACT
     ERS PER ROW{CTRL 8}?"LW
                             :REM*253
1971 PRINT"{CRSR UP}"TAB(24);:IN
     PUTLW                   :REM*142
1972 PRINT"{COMD 6} # LABELS ACR
     OSS PAGE{3 SPACEs}{CTRL 8}?
     "LT                      :REM*47
1973 PRINT"{CRSR UP}"TAB(24);:IN
     PUTLT:IFLT<1ORLT>4THENPRINT
     "{CRSR UP}":GOTO1973{8 SPAC
     Es}                     :REM*166
1974 LP(1)=1:LP(2)=LW+2:LP(3)=2*
     (LW+2):LP(4)=3*(LW+2){20 SP
     ACEs}                   :REM*117
1975 GOTO1940                :REM*148
1976 REM-PRINTER CMDS        :REM*163
1978 PRINT"{CTRL 8}{SHFT CLR} {C
     TRL 9}{11 SPACEs}PRINTER CO
     MMAND{12 SPACEs}{CTRL 0}"
                         :REM*65
1980 PRINT"{COMD 6}{CRSR DN} THI
     S ROUTINE WILL SEND CHARACT
     ER"                :REM*223
1982 PRINT" STRING [CHR$()] COMM
     ANDS TO AN ASCII"  :REM*177
1984 PRINT" PRINTER.{2 SPACEs}CO
     MMANDS MUST BE ENTERED IN"
                        :REM*123
1986 PRINT" THE FORM OF INTEGERS
      SUCH AS:"         :REM*213
1988 PRINT"{CRSR DN}{CTRL 8} ? 2
     7{COMD 6}{5 SPACEs}(CODE 1)
     "                   :REM*13
1990 PRINT"{CTRL 8} ? 66{COMD 6}
     {5 SPACEs}(CODE 2)":REM*227
1992 PRINT"{CTRL 8} ? 2{COMD 6}{
     6 SPACEs}(CODE 3)"    :REM*3
1994 PRINT"{CTRL 8} ? *{COMD 6}{
     6 SPACEs}(END)"    :REM*249
1996 PRINT"{CRSR DN} THIS WILL B
     E SENT TO THE PRINTER AS:"
                        :REM*247
1998 PRINT"{CRSR DN}{CTRL 8}{3 S
     PACEs}PRINT#4,CHR$(27)CHR$(
     66)CHR$(2){COMD 6}":REM*197
2000 PRINT"{CRSR DN} UP TO FOUR(
     4) NUMBERS MAY BE SENT,"
                        :REM*225
2002 PRINT" THE FIRST NORMALLY B
     EING {CTRL 8}{CTRL 9}27{CTR
     L 0}{COMD 6}, THE" :REM*155
2004 PRINT" ESCAPE CHARACTER.{2
     SPACEs}END THE SEQUENCE"
                        :REM*149
2006 PRINT" BY PRESSING {CTRL 2}
     {CTRL 9}RETURN{COMD 6}{CTRL
      0} WHEN THE ASTERISK"
                         :REM*73
2008 PRINT" IS SHOWING.{2 SPACEs
     }PRINTERS WILL VARY, SO"
                        :REM*153
2010 PRINT" CHECK YOUR MANUAL FO
     R THE CODES."      :REM*245
2012 PRINT"{CRSR DN}{4 SPACEs}{C
     TRL 2}{CTRL 9}ANY KEY{CTRL
     0}{COMD 6} TO CONTINUE OR {
     CTRL 2}{CTRL 9}E{COMD 6}{CT
     RL 0}XIT?"          :REM*81
2014 GOSUB1522:IFA$="E"THEN1584
                         :REM*97
2016 PRINT"{CTRL 8}{SHFT CLR} {C
     TRL 9}{8 SPACEs}SEND PRINTE
     R COMMAND{10 SPACEs}{CTRL 0
     }"                 :REM*181
2018 PRINT"{CRSR DN}{COMD 6} ENT
     ER CODE, THEN PRESS {CTRL 2
     }{CTRL 9}RETURN{CTRL 0}{COM
     D 6}"               :REM*99
2020 PRINT"{CRSR DN} {CTRL 2}{CT
     RL 9}RETURN{COMD 6}{CTRL 0}
      ONLY TO QUIT{2 CRSR DNs}{C
     TRL 8}"            :REM*111
2022 FORI=1TO4:PRINT"{COMD 6}COD
     E{CTRL 8}";I;" ? * {4 CRSR
     LFs}";:INPUTI$(I)   :REM*69
2024 IFI$(I)="*"THEN2028 :REM*99
2026 NEXTI               :REM*69
2028 ON(I-1)GOTO2030,2032,2034,2
     036:GOTO2039       :REM*115
2030 PRINT#4,CHR$(VAL(I$(1))):GO
     TO2038              :REM*23
2032 PRINT#4,CHR$(VAL(I$(1)))CHR
     $(VAL(I$(2))):GOTO2038
                        :REM*161
2034 PRINT#4,CHR$(VAL(I$(1)))CHR
     $(VAL(I$(2)))CHR$(VAL(I$(3)
     )):GOTO2038        :REM*239
2036 PRINT#4,CHR$(VAL(I$(1)))CHR
     $(VAL(I$(2)))CHR$(VAL(I$(3)
     ))CHR$(VAL(I$(4))) :REM*243
2038 GOSUB2888           :REM*95
2039 PRINTTAB(10)"{2 CRSR DNs}{C
     TRL 9}{CTRL 2}A{COMD 6}{CTR
     L 0}NOTHER CODE"   :REM*236
2040 PRINTTAB(10)"{CRSR DN}{CTRL
      9}{CTRL 2}T{COMD 6}{CTRL 0
     }EST CHANGE"        :REM*37
2042 PRINTTAB(10)"{CRSR DN}{CTRL
      9}{CTRL 2}E{COMD 6}{CTRL 0
     }XIT TO START"      :REM*25
2044 GOSUB1521          :REM*169
2046 GOSUB1522:IFA$="A"THEN2016
                        :REM*235
2048 IFA$="T"THENPRINT#4,"ABCDEF
     GHIJKLMNOPQRSTUVWXYZ":GOSUB
     2888:GOTO2046       :REM*94
2050 IFA$="E"THENRETURN :REM*176
2052 GOSUB602:GOTO2046  :REM*164
2854 REM-SETUP          :REM*199
2856 PRINT"{CTRL 8}{SHFT CLR} {C
     TRL 9}{4 SPACEs}PRINTER OR
     INTERFACE CONFIGURE{4 SPACE
     s}"                :REM*193
2857 IFP<>0THENPRINT"{COMD 6}{CR
     SR DN} CURRENT OPTION IS:{C
     TRL 8}"P           :REM*144
2858 PRINT"{CRSR DN} {COMD 6}PRE
     SS {CTRL 9}{CTRL 2}1{COMD 6
     }{CTRL 0}{2 SPACEs}CARDCO A
     , 1525"            :REM*195
2860 PRINTTAB(7)"{CTRL 9}{CTRL 2
     }2{COMD 6}{CTRL 0}{2 SPACEs
     }PRINTERS W/ GRAPHIC INTERF
     ACE"               :REM*219
```

→

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Circle 91 on Reader Service card.

Listing 1 continued.

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2862 PRINTTAB(7)"{CTRL 9}{CTRL 2
     }3{COMD 6}{CTRL 0}{2 SPACEs
     }1526, MPS801/802/803"
                         :REM*185
2863 PRINTTAB(7)"{CTRL 9}{CTRL 2
     }4{COMD 6}{CTRL 0}{2 SPACEs
     }PRINT TO SCREEN"    :REM*2
2864 IFP<>0THENPRINT"{2 CRSR DNs
     }{3 SPACEs}OR{2 SPACEs}{CTR
     L 9}{CTRL 2}S{COMD 6}{CTRL
     0}END PRINTER COMMANDS"
                          :REM*87
2866 IFP<>0THENPRINTTAB(7)"{2 CR
     SR DNs}{CTRL 9}{CTRL 2}E{CO
     MD 6}{CTRL 0}XIT TO CONTINU
     E"                   :REM*93
2868 GOSUB1521           :REM*229
2870 GOSUB1522            :REM*39
2872 IFA$="E"THENRETURN :REM*233
2874 IFA$="S"THENGOTO1978
                         :REM*241
2876 P=VAL(A$):PF=4      :REM*167
2878 IFP=1THENB1$=CHR$(10):GOTO2
     856                  :REM*19
2880 IFP=2THENB1$=CHR$(0):GOTO28
     56                  :REM*199
2882 IFP=3THENB1$=CHR$(0):GOTO28
     56                  :REM*233
2883 IFP=4THENB1$=CHR$(0):PF=3:G
     OTO2856             :REM*142
2884 GOSUB602:GOTO2870   :REM*211
2886 REM-TERMINATOR      :REM*237
2888 ONPGOTO2890,2892,2894,2892
                          :REM*37
2890 PRINT#PF,B1$;:RETURN:REM*65
2892 PRINT#PF,B1$:RETURN :REM*31
2894 PRINT#PF:RETURN     :REM*141
2896 REM-JUMP TO         :REM*191
2898 INPUT"{SHFT CLR}{COMD 6}{CR
     SR DN} START AT RECORD{CTRL
      8}? 1{3 CRSR LFs}";S:IFS>X
      OR S<1THEN2898     :REM*165
2900 IFS=1THENRETURN     :REM*171
2902 FORI=1TOS-1:PRINT"{CRSR UP}
      BYPASSING RECORD #"STR$(I)
     " OF"STR$(X)         :REM*15
2904 FORN=1TOF:INPUT#5,REC$(N):N
     EXTN:GOSUB1618:IFET=8THEN15
     28                  :REM*205
2906 NEXTI:RETURN         :REM*47
2908 REM-REPORT          :REM*147
2910 PRINT"{COMD 6}{SHFT CLR}{CR
     SR DN}{CTRL 9}REPORT SIZE{C
     TRL 0} UP TO 136 CHARACTER
     WIDE."               :REM*93
2912 PRINT"{CRSR DN}MODIFY PRINT
     ER FOR WIDTHS > 80 CHRS."
                         :REM*173
2918 PRINT"{CRSR DN}NUMBER OF CH
     ARACTERS{CTRL 8}?":PRINT"?{
     3 SPACEs}{3 CRSR LFs}";PW:I
     NPUT"{CRSR UP}";PW  :REM*65
2920 IFPW>136THEN2918    :REM*233
2922 PRINT"{SHFT CLR}{CRSR DN}{C
     TRL 9}{COMD 6}TITLE FORMAT{
     CTRL 0} UP TO 4 TITLE LINES
      OF"                 :REM*93
2924 PRINT"INFORMATION AT THE TO
     P OF THE FORM."     :REM*187
2926 PRINT"{CRSR DN}NUMBER OF LI
     NES{CTRL 8}?":PRINT"?{3 SPA
     CEs}{3 CRSR LFs}";NL:INPUT"
     {CRSR UP}";NL:IFNL>4THEN292
     6                   :REM*173
2927 IFNL=0THENTT$(1)=">":GOTO29
     36                  :REM*196
2928 FORJ=1TONL:PRINT"{COMD 6}TI
     TLE #";J:PRINT"{CTRL 8}? >{
     2 SPACEs}{3 CRSR LFs}";TT$(
     J)                   :REM*85
2930 IFLEN(TT$(J))>37THENPRINT"{
     CRSR UP}";          :REM*181
2932 INPUT"{CRSR UP}";TT$(J):IFT
     T$(J)=""THENTT$(J)=">"
                         :REM*219
2933 TT$(J)=LEFT$(TT$(J),PW)
                         :REM*114
2934 NEXTJ               :REM*221
2936 PRINT"{SHFT CLR}{CTRL 9}{CO
     MD 6}COLUMN FORMAT{CTRL 0}
     UP TO 16 COLUMNS WITH 2"
                          :REM*61
2937 PRINT"SPACES BETWEEN COLUMN
     S"                  :REM*116
2938 PRINT"{CRSR DN}NUMBER OF CO
     LUMNS{CTRL 8}?":PRINT"?{3 S
     PACEs}{3 CRSR LFs}";NC:INPU
     T"{CRSR UP}";NC:IFNC>16THEN
     2938                 :REM*45
2940 FORJ=1TONC:PRINT"{COMD 6}PO
     SITION OF COLUMN #";J:PRINT
     "{CTRL 8}?{3 SPACEs}{3 CRSR
      LFs}";PC(J)        :REM*135
2942 INPUT"{CRSR UP}";PC(J):NEXT
     J                   :REM*147
2944 PRINT"{SHFT CLR}{CTRL 9}{CO
     MD 6}HEADING FORMAT{CTRL 0}
      COLUMN HEADINGS CANNOT"
                         :REM*229
2946 PRINT"EXCEED WIDTH OF COLUM
     NS:{CRSR DN}"        :REM*75
2948 FORJ=1TONC:PRINT"{COMD 6}CO
     LUMN{CTRL 8}";J;"{COMD 6} H
     EADING{CTRL 8}";    :REM*245
2950 IFJ=NCTHENPRINTPW-PC(J);:GO
     TO2954              :REM*199
2952 PRINTPC(J+1)-2-PC(J);
                         :REM*145
2954 PRINT"{COMD 6} CHARACTERS W
     IDE"                :REM*127
2956 PRINT"{CTRL 8}? >{2 SPACEs}
     {3 CRSR LFs}";HC$(J):INPUT"
     {CRSR UP}";HC$(J):IFHC$(J)=
     ""THENHC$(J)=">"    :REM*129
2958 NEXTJ               :REM*245
2960 PRINT"{SHFT CLR}{COMD 6}CHO
     OSE WHICH FIELDS GO UNDER T
     HE COLUMNS"          :REM*99
2962 PRINT"{CRSR UP}ENTER {CTRL
     2}{CTRL 9}0{COMD 6}{CTRL 0}
      IF ADDITIONAL FIELDS ARE":
     PRINT"NOT DESIRED.{CRSR DN}
     "                     :REM*5
2964 FORN=1TOF:PRINT"{CTRL 9}{CT
     RL 2}";N;"{CTRL 0}{COMD 6}
     ";F$(N):NEXTN        :REM*21
2966 FORJ=1TONC:PRINT"{HOME}{4 C
     RSR DNs}";TAB(25)"{COMD 6}C
     OLUMN{CTRL 8}";J;"{2 CRSR D
     Ns}"                 :REM*77
2968 FORL=1TO3:PRINTTAB(25)"{CRS
     R UP}{COMD 6}FIELD{CTRL 8}"
     ;L;" 0 {2 CRSR LFs}";RP$(J,
     L)                   :REM*39
2970 PRINTTAB(32);"{CRSR UP}";:I
     NPUTRP$(J,L):NEXTL:NEXTJ
                          :REM*25
2972 PRINT"{SHFT CLR}{COMD 6}DO
     YOU WISH TO SUM THE DATA IN
      COLUMN{CTRL 8}"STR$(NC)"{C
     OMD 6}?"            :REM*103
2974 PRINT"THIS COLUMN MUST ONLY
      BE FORMATTED WITH":REM*245
2976 PRINT"ONLY ONE FIELD. ENTER
      {CTRL 2}{CTRL 9}1{COMD 6}{
     CTRL 0} (YES) OR {CTRL 2}{C
     TRL 9}0{COMD 6}{CTRL 0} (N0
     )"                  :REM*149
2978 PRINT"{CRSR DN}{CTRL 8}?";Z
     :INPUT"{CRSR UP}";Z:REM*197
2980 PRINT"{SHFT CLR}{2 CRSR DNs
     }{COMD 6}DO YOU WISH TO REV
     IEW YOUR FORMAT AND/OR"
                         :REM*117
2982 PRINT"MAKE CORRECTIONS?{2 S
     PACEs}PRESS {CTRL 9}{CTRL 2
     }Y{COMD 6}{CTRL 0} OR {CTRL
      9}{CTRL 2}N{CTRL 8}{CTRL 0
     }"                  :REM*131
2984 GOSUB1522           :REM*153
2986 IFA$="Y"THEN2910    :REM*215
2988 IFA$="N"THEN2994     :REM*85
2990 GOTO2984             :REM*27
2992 REM-SAVE REPORT      :REM*65
2994 FL=2:PRINT"{CRSR DN}{COMD 6
     } {CTRL 9}SAVE REPORT FORMA
     T{CTRL 0}?{5 SPACEs}{CTRL 9
     }{CTRL 2}Y{COMD 6}{CTRL 0}
     OR {CTRL 9}{CTRL 2}N{CTRL 8
     }{CTRL 0}"           :REM*67
2996 GOSUB1522           :REM*165
2998 IFA$="N"THEN3118     :REM*37
3000 IFA$="Y"THEN3004     :REM*17
3002 GOTO2996            :REM*199
3004 PRINT"{CRSR DN}{COMD 6}SAVE
      UNDER WHAT FILE NAME{CTRL
     8}?":IFRF$=D$ORRF$=""THENRF
     $=NF$               :REM*143
3006 PRINT"{CRSR DN}{2 SPACEs}";
     RF$:INPUT"{CRSR UP}";RF$:IF
     RF$=""THEN3118       :REM*97
3008 OPEN15,8,15:PRINT#15,"S0:RP
     ] "+RF$:GOSUB1618:IFET=8THE
     N3118               :REM*159
3010 OPEN5,8,5,"0:RP] "+RF$+",S,
     W":GOSUB1618:IFET=8THEN3118
                         :REM*111
3012 PRINT#5,PW;CR$;NL;CR$;NC:GO
     SUB1618:IFET=8THEN3118
                         :REM*207
3014 FORJ=1TONL:IFTT$(J)=""THENT
     T$(J)=">"            :REM*21
3016 PRINT#5,TT$(J):GOSUB1618:IF
     ET=8THEN3118         :REM*71
3018 NEXTJ                :REM*49
3020 FORI=1TONC           :REM*15
3022 PRINT#5,PC(I);CR$;HC$(I):GO
     SUB1618:IFET=8THEN3118
                          :REM*51
3024 FORN=1TO3           :REM*105
3026 PRINT#5,RP$(I,N):GOSUB1618:
     IFET=8THEN3118      :REM*225
3028 NEXTN:NEXTI:PRINT#5,STR$(Z)
     ;CR$;E$:GOSUB1618:IFET=8THE
     N3118                :REM*35
3030 CLOSE5:CLOSE15:GOTO3118
                         :REM*107
3032 REM-LABELS          :REM*155
3034 PRINT"{CTRL 8}{SHFT CLR} {C
     TRL 9}{13 SPACEs}LABEL FORM
     AT{13 SPACEs}"       :REM*17
3036 PRINT"{CRSR DN}{COMD 6}THIS
      FORMAT USES 1 TO 4 ACROSS
     LABELS.              :REM*75
3038 PRINT"EACH LABEL CONTAINS U
     P TO{CTRL 8}"T%-1"{COMD 6}
     ROWS.                :REM*41
3040 PRINT"EACH ROW CAN CONSIST
     OF 1 TO 3 FIELDS.    :REM*47
3042 PRINT"IF THE LENGTH OF MULT
     IPLE ITEMS EXCEEDS   :REM*93
3044 PRINT"{CRSR LF}{CTRL 8}"LW"
     {COMD 6}CHARACTERS, SOME DA
     TA WILL BE CUTOFF"   :REM*51
3046 PRINT"{CRSR DN}{CTRL 9}{COM
     D 6}NUMBER OF ROWS{CTRL 8}?
     ":PRINT"?{3 SPACEs}{3 CRSR
     LFs}";RW:INPUT"{CRSR UP}";R
     W                    :REM*89
3048 IFRW>T%-1THENPRINT"{3 CRSR
     UPs}":GOTO3046      :REM*109
3050 IFRW=0THEN3118      :REM*125
3052 PRINT"{SHFT CLR}{COMD 6}CHO
     OSE WHICH FIELDS GO IN EACH
      ROW"               :REM*211
3054 PRINT"ENTER {CTRL 2}{CTRL 9
     }0{COMD 6}{CTRL 0} IF ADDIT
     IONAL FIELDS ARE":PRINT"NOT
      DESIRED.{CRSR DN}":REM*219
3056 FORN=1TOF:PRINT"{CTRL 2}{CT
     RL 9}";N;"{COMD 6}{CTRL 0}
     ";F$(N):NEXTN          :REM*191
3058 FOR J=1TORW:PRINT"{HOME}{4
     CRSR DNs}";TAB(25)"{COMD 6}
     ROW{CTRL 8}";J;"{2 CRSR DNs
     }"                     :REM*171
3060 FORL=1TO3:PRINTTAB(25)"{CRS
     R UP}{COMD 6}FIELD{CTRL 8}"
     ;L;" 0 {2 CRSR LFs}";ML$(J,
     L)                      :REM*25
3062 PRINTTAB(32);"{CRSR UP}";:I
     NPUTML$(J,L)            :REM*71
3064 NEXTL                  :REM*111
3066 NEXTJ                   :REM*97
3068 PRINT"{SHFT CLR}{2 CRSR DNs
     }{COMD 6}DO YOU WISH TO REV
     IEW YOUR FORMAT AND/OR"
                            :REM*205
3070 PRINT"MAKE CORRECTIONS?{2 S
     PACEs}PRESS {CTRL 2}{CTRL 9
     }Y{CTRL 0}{COMD 6} OR {CTRL
      2}{CTRL 9}N{CTRL 8}{CTRL 0
     }"                     :REM*199
3072 GOSUB1522              :REM*242
3074 IFA$="Y"THEN3034       :REM*140
3076 IFA$="N"THEN3082        :REM*26
3078 GOTO3072                :REM*72
3080 REM-SAVE LABEL          :REM*24
3082 FL=3:PRINT"{CRSR DN}{CTRL 9
     }{COMD 6}SAVE LABEL FORMAT{
     CTRL 0}?{7 SPACEs}{CTRL 9}{
     CTRL 2}Y{COMD 6}{CTRL 0} OR
      {CTRL 2}{CTRL 9}N{CTRL 8}{
     CTRL 0}"                :REM*96
3084 GOSUB1522              :REM*254
3086 IFA$="N"THEN3118       :REM*126
3088 IFA$="Y"THEN3092       :REM*186
3090 GOTO3084               :REM*248
3092 PRINT"{CRSR DN}{COMD 6}SAVE
      UNDER WHAT FILE NAME{CTRL
     8}?":IFMF$=D$ORMF$=""THENMF
     $=NF$                   :REM*90
3094 PRINT"{CRSR DN}{2 SPACEs}";
     MF$:INPUT"{CRSR UP}";MF$:IF
     MF$=""THEN3118          :REM*24
3096 OPEN15,8,15:PRINT#15,"S0:ML
     ] "+MF$:GOSUB1618:IFET=8THE
     N3118                  :REM*132
3098 OPEN5,8,5,"0:ML] "+MF$+",S,
     W":GOSUB1618:IFET=8THEN3118
                            :REM*226
3100 PRINT#5,RW              :REM*22
3102 FORI=1TORW:FORN=1TO3
                            :REM*122
3104 PRINT#5,ML$(I,N):GOSUB1618:
     IFET=8THEN3118         :REM*144
3106 NEXTN:NEXTI            :REM*240
3110 PRINT#5,"EOF":GOSUB1618:IFE
     T=8THEN3118            :REM*148
3112 CLOSE5:CLOSE15         :REM*254
3116 REM-PRINT OPTIONS       :REM*60
3118 PRINT"{CTRL 8}{SHFT CLR} {C
     TRL 9}{9 SPACEs}PRINT OPTIO
     NS MENU{9 SPACEs}" :REM*130
3119 PRINT"{COMD 6}{CRSR DN} CUR
     RENT RECORD FILE: {CTRL 8}{
     CTRL 9}"NF$            :REM*107
3120 PRINT"{COMD 6} CURRENT FORM
     AT FILE: {CTRL 8}{CTRL 9}";
     :IFK=2THENPRINTRF$;:GOTO312
     2                      :REM*214
3121 IFK=3THENPRINTMF$;   :REM*81
3122 PRINT:PRINTTAB(7)"{CRSR DN}
     {CTRL 9}{CTRL 2}L{COMD 6}{C
     TRL 0}OAD OLD FORMAT"
                            :REM*216
3123 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}C{COMD 6}{CTRL 0}
     REATE/CHANGE FORMAT"
                            :REM*231
3124 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}S{COMD 6}{CTRL 0}
     AVE CURRENT FORMAT":REM*232
3125 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}P{COMD 6}{CTRL 0}
     RINT RECORDS"          :REM*251
3126 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}${COMD 6}{CTRL 0}
      DISK DIRECTORY {CTRL 9}{CT
     RL 2}4{COMD 6}{CTRL 0}"
                             :REM*24
3128 PRINTTAB(7)"{CRSR DN}{CTRL
     9}{CTRL 2}E{COMD 6}{CTRL 0}
     XIT"                    :REM*68
3130 GOSUB1521              :REM*236
3132 GOSUB1522               :REM*46
3134 IFA$="L"THENONKGOTO3132,166
     8,1704                  :REM*54
3136 IFA$="S"THENONKGOTO3132,300
     4,3092                 :REM*182
3138 IFA$="C"THENONKGOTO3132,291
     0,3034                 :REM*128
3140 IFA$="4"ORA$="$"THENGOSUB16
     28:GOTO3118            :REM*206
3141 IFA$="P"THEN1730       :REM*251
3142 IFA$="E"THEN1584        :REM*54
3144 GOSUB602:GOTO3132      :REM*204
3146 REM-RIGHT JUSTIFY      :REM*202
3148 D=2:CLM$=STR$(INT(VAL(CLM$)
     *10{UP ARROW}2+.5)):REM*148
3150 IFLEFT$(CLM$,1)=" "THENCLM$
     =MID$(CLM$,D)          :REM*118
3152 IFD>LEN(CLM$)THENCLM$=RIGHT
     $("0000000"+CLM$,D):REM*48
3154 IFDTHENCLM$=LEFT$(CLM$,LEN(
     CLM$)-D)+"."+RIGHT$(CLM$,D)
                              :REM*6
3156 IFLEN(CLM$)<CWTHENCLM$=RIGH
     T$(S$+CLM$,CW)         :REM*208
3158 IFLEN(CLM$)>CWTHENCLM$=LEFT
     $(CLM$,CW)              :REM*40
3160 PRINT#PF,CLM$;:RETURN
                            :REM*100
```

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COMMODORE CLINIC

By JIM STRASMA

Do you have a problem or question about your Commodore computer? Commodore Clinic can help. Just send your question on a postcard to:

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Queries are answered only through this column, and, due to the available space and the volume of mail, we select for publication only those questions that are likely to appeal to the majority of our readers.

HARDWARE

Q: *I've been advised to buy the C-1660 modem to use with my C-64. I thought the C-1670 was the same kind of modem, only faster, with the ability to automatically switch to different speeds. Which modem is better?*

Russ Herling
Rockville Centre, NY

A: In the world of modems, faster is usually considered better, since most phone companies and on-line services charge by the minute. A 1200-baud modem transmits and receives information four times faster than a 300-baud modem, potentially cutting down the time you pay for by a corresponding amount. On the other hand, some on-line services charge extra for 1200 baud, so, if all you want is to read and type messages, 300 baud may be preferable. A speed of 300 baud is comfortable for reading and faster than most people type.

If you think you'll ever want the added speed of a 1200-baud modem and can afford its higher price, buy the 1670. It works at both 300 and 1200 baud and has a handy, built-in speaker to inform you, in those seconds before you're connected to the system you're calling, of happenings on the phone line, such as dial tones, busy signals, electrical interference and irate people awakened in the middle of the night.

Q: *Where can I buy a one-slot expansion board—just an adapter—to insert into the game port so that game cartridges can plug into it and not into the game port itself?*

Robert Desko
Endicott, NY

A: Value-Soft (9513 SW Barbur Blvd., B-56, Portland, OR 97219), a regular advertiser in *RUN*, offers exactly what you're looking for. Called LBow, it includes a reset switch and sells for about $20. You can order one by calling 1-800-544-SOFT.

Q: *I'm doing some work with the audio/video port on my C-64. My* C-64 Users Guide *and* C-64 Programmer's Reference Guide *(1983 edition) describe the port as a 5-pin DIN connection, but my computer has eight pins. What are the extra pins for?*

Matthew C. Sutton
Fraser, CO

A: The functions of the first five pins of your 8-pin video connector are the same as in the older 5-pin version, and if you had an older 5-pin video cable, it would plug into your 8-pin connector. Of the three added pins, only one is connected to anything. The new pin 6 carries Chroma, the color component of the video signal being sent to the display monitor. Pin 1 carries the rest of the signal, called Luma, for luminance, or brightness.

By separating the Chroma and Luma signals in the computer, rather than combining them into the composite video-out signal used in the first C-64s, Commodore was able to improve the picture quality on its monitors without the high cost of the completely separated RGB signals used in 80-column mode on the C-128 and in the Amiga.

Physically, pin 6 is at the center of your connector, with pins 7 and 8 at the top, above pins 1 and 3, respectively. The other pins are numbered as shown in the manuals. The manuals picture the connector as you'd see it when facing the back of the computer.

Q: *Is there a big difference between Commodore's new model 64C and my C-64? Also, would I need to buy a new disk drive to use with the 64C?*

Albert Schumacher
Address unknown

A: The main changes in the 64C are the plastic housing, which has been redesigned to match the style of the C-128, and the inclusion of the GEOS operating system shell program. There have been some internal

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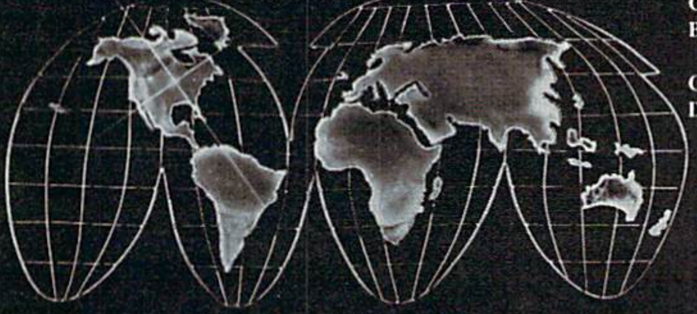

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changes also, such as in the power supply, but nothing to justify replacing a properly working C-64 with a 64C. If you wish to own a copy of GEOS, it's regularly advertised in *RUN* and works fine on C-64s of any age.

Q: Commodore ran an advertisement in the August 1985 issue of RUN, *claiming that the C-128 can be expanded to 512K. But I've read that RAM expansion modules won't work on early releases of the C-128. If my model can't be expanded, what recourse do I have? I feel Commodore should replace it, or the Federal Trade Commission should bring charges against Commodore for fraudulent advertising.*

Eugene Cozzi
Barre, VT

A: Commodore has had enough worries without new attention from the FTC, so first give them (or better yet, your original dealer) a chance to set things right. If that doesn't work, you do have some recourse if you bought the RAM expander (or the C-128 itself) on the strength of that advertisement, and the RAM expander turns out to be incompatible with your particular machine. A lawyer can explain the steps to take if necessary.

A while back there was a similar question about CP/M for the C-64, which Commodore advertised for quite some time before it was actually available and which didn't work with all C-64s when it did appear on the market. As I recall, Commodore made some assurances to the Federal government that they would stop advertising products and features not actually available.

SOFTWARE

Q: I've looked everywhere for disk mailers, without luck. Where can I get them?

David Perdue
St. Clairsville, OH

A: I use 5- by 7-inch photo mailers and find them entirely satisfactory. The only one that ever failed was intentionally folded in half by the postal service to cram it into a small post office box.

I buy "#1 stay flat" photo mailers (minimum quantity 100) from Calumet Carton Co., PO Box 405, S. Holland, IL 60473. If you don't need that many, Quill Corp. (PO Box 4700, Lincolnshire, IL 60197) sells a true disk mailer with a non-static foam liner in quantities as small as five. However, you probably could order the same mailers through any office supply dealer.

Q: Is a dual drive on the C-64 and C-128 addressed as device 8, drives 0 and 1? Or is it addressed as devices 8 and 9? Does CP/M on the C-128 require a dual drive, or will two single drives work? Is CP/M drive A Commodore's device 8 and CP/M drive B Commodore's device 9, or is CP/M drive A Commodore's device 8, drive 0 and CP/M drive B Commodore's device 8, drive 1?

I also need to know if commercial programs, in general, are flexible enough to permit different drive configurations. Do you see my confusion?

Ronald Brown
Tuscaloosa, AL

A: You aren't the only one who's confused, since Commodore has sold drives working in both the ways you mention. Commodore's dual drive units, those with two physical disk drives inside a single cabinet, have a single device number, with one of the drives addressed as drive 0 and the other addressed as drive 1. These were the first drives Commodore developed, so they're well supported by its operating systems and older commercial programs.

With the advent of the VIC, Commodore went in another direction, putting only one physical disk drive inside each drive unit. When VICs, C-64s and C-128s are used with two disk drives in separate cabinets, the drives are addressed as devices 8 and 9, rather than as drives 0 and 1.

Further complicating matters, the older dual drives can be adapted to work with the VIC, C-64 and C-128, and, when used, still need their two drives referred to as drive 0 and drive 1.

The bottom line here is that most of the really good commercial programs that require two disk drives can address them either way, depending on your particular equipment.

As for CP/M, on the C-64 it expects drive B to be the second drive in a

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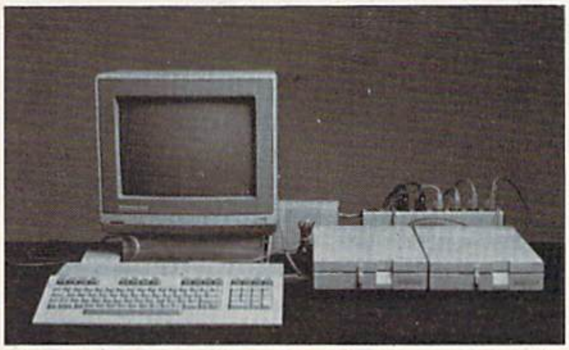

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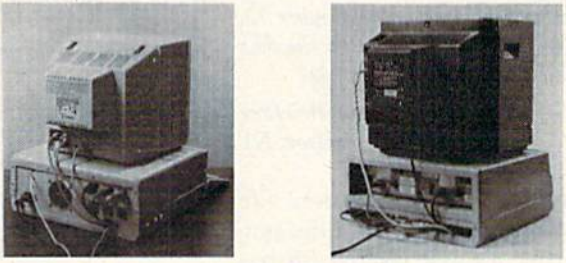

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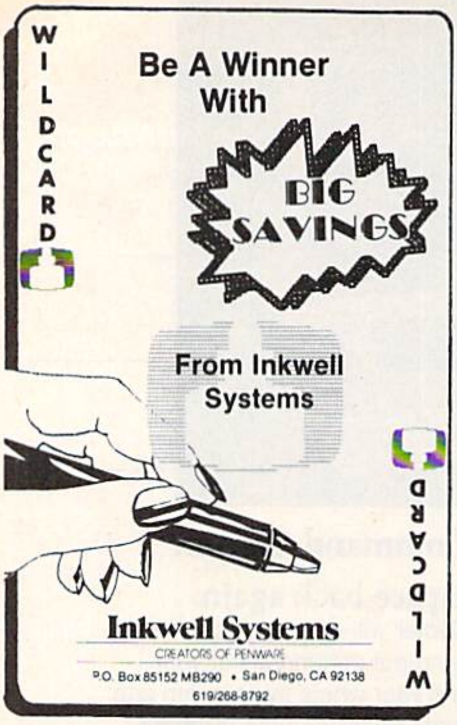
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dual-disk unit. Since very few C-64 owners have that setup and CP/M virtually demands two disk drives, the newer C-128 version of CP/M lets drive A be device 8 and drive B be device 9. If you have only one disk drive, CP/M on the C-128 also lets you address a virtual drive E as device 8 and then swap disks in the single drive.

Q: I'm using Timeworks' Data Manager 128 with a 1571 disk drive. I've entered 230 four-page records, but when I enter record number 231, I get error number 52, File Too Long. Why is this, when the disk directory still shows 588 blocks free?

Steve Brichter
New Windsor, NY

A: Although a single sequential file can grow indefinitely within the limits of the disk, a single relative file has a limited size—something C-64 owners didn't have to worry about because the limit is slightly larger than the capacity of a 1541 disk.

When this problem last surfaced, back in the days of the Commodore 8096 computer and 8050 disk drive, programs like Silicon Office solved it by treating two or three separate relative files as though they were part of the same one. You can do something similar by putting all your records whose keys start with the letters A–M in one file, and all those whose keys start with N–Z in a second file. This is not an ideal solution (especially when you need a Zip code-sorted report), but it may be your only solution until either programs like Silicon Office appear for the C-128 or Commodore expands the capacity of relative files, as they did for the 8250 disk drive during the last days of the PET.

Q: I've been using a Basic language program for two years to calculate handicaps and keep win-and-loss records for my golf league here in the lower Rio Grande valley of Texas. My problem arises from the fact that the program uses a directory entry for each golfer, and the disk drive allows only somewhat less than 144 directory entries. When the league swells to over 160 golfers each winter, I end up doing calculations and keeping records for 25–30 of them as a separate operation.

So, last summer I purchased a C-128 with the expectation that, when I got a 1571 disk drive to use with it, I'd have twice as many directory entries (288) available, since the 1571 uses both sides of a disk. But, alas, there are still only 144. What can I do?

George Cowing
Pharr, TX

A: If you really want a larger directory, you'll need to buy a hard disk drive. Commodore's old 9300 hard disk drive provided 25,000 directory entries—enough for any league—and the newer, third-party drives should match it.

However, before you make that investment, try this software solution: Instead of 160 sequential files, one per golfer, use one relative file with one record per golfer. If your records need to be larger than one relative file record allows, you can allot each golfer two consecutive records and make a corresponding correction when you're actually looking up those records.

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Q: I have the program Micromon on disk, but I can't get it to activate. What SYS command must I enter to use it?

Jim Smith
Sterling, KS

A: First, be sure you're loading the program without relocation, as follows:

```
LOAD "0:MICROMON",8,1
```

Then, to begin using it, the usual SYS command is:

```
SYS(4096)
```

The SYS command assumes Micromon is at address $1000, its normal address on distribution copies. However, the program comes with instruc-

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tions for relocation, so the copy you got may load into some other address, such as $C000. I prefer the latter address myself, since it's out of the way of Basic programs.

PROGRAMMING

Q: How can I access a user file from a disk?

L. P. Thomason
Jacksonville, FL

A: To read a user file, just treat it as a sequential file, but replace the S for sequential in the File Open statement with a U for user. For example, to read a user file named Fido from drive 0 of device 8, you could use this Open command:

```
OPEN 1,8,3,“0:FIDO,U,R”
```

Once opened, user files can be read and written to in the same way as sequential files.

Q: I need a Basic statement, like Gosub LL, where LL is a variable. I've found such routines for nearly every computer except the one I use, the C-128 in 128 mode.

Ronald Fein
Kingston, NY

A: Although there are hacker tricks available to do exactly what you want, there is a far better solution—one that works with all versions of Commodore Basic and all Commodore computers from the first PET to the C-128. It's the On Gosub command.

Presumably, you want to write a piece of code like the following:

```
10 INPUT“CHOOSE 100, 200, OR 300”;LL
20 GOSUB LL
```

where LL contains the line number that begins the subroutine you wish to execute. This approach, although attractive on the surface, is dangerous, since you may someday need to renumber your program lines, and no renumbering program is smart enough to change line numbers in the text inside your Print statements.

The alternative is as follows:

```
10 INPUT “CHOOSE 1, 2, OR 3”;LL
20 ON LL GOSUB 100, 200, 300
```

The only possible disadvantage to this approach is that you now enter the numerical position of the desired line number within a list of line numbers, rather than the line number itself. However, I consider that an advantage, since it's faster and easier to type one digit than three.

UPDATE

Update: In the December 1986 Commodore Clinic, a letter was published from Fred Goldsmith, who was looking for a genealogical program for the C-128. I use the Personal Ancestral File from the Church of Jesus Christ of Latter-Day Saints (the Mormons) in Salt Lake City, Utah. It keeps track of each relative's position in your family tree by individual entry, marriage entry and children entries. You can also use it to keep track of your genealogical research.

Printouts include individual entry forms, family charts, pedigree charts, descendant charts, lists sorted in various ways, individual notes and research data. Another feature of this program is its ability to transfer information to other users via modem.

I've entered data on over 1600 people so far, and the program has performed beautifully. The best part is that it costs only $35. The only catch is that it must be run in the 128's CP/M mode, which can be a bit slow unless you use the 1750 RAM expander to hold data files. To use Personal Ancestral File, you'll need an 80-column monitor, a CP/M-compatible printer with an interface able to print 133 columns across a page, and either two 1571 disk drives or one drive plus a RAM expander.

John Hughes
Sonora, CA

A: I found out about Personal Ancestral File last fall, and I've heard nothing but the highest praise for it since. Though I haven't tested it, it's surely worth at least $35 to anyone interested in genealogy. The address for ordering is Ancestral File Operations Unit, Genealogical Department, 50 East North Temple St., Salt Lake City, UT 84150. Be sure to request the Kaypro CP/M version. ■

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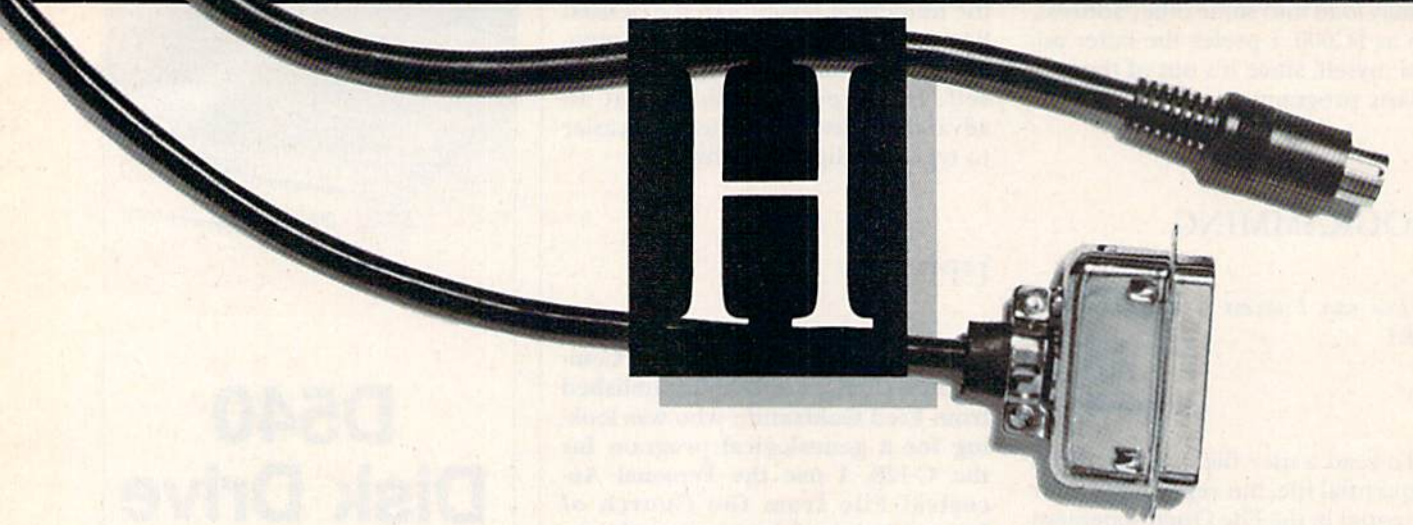


The NLQ Chip

Trade in Your Emphasized Type For Near-Letter Quality

The Gemini 10X printer is now available from mail-order dealers for close-out prices of about $150. The price is a good one for a printer with an adjustable tractor feed and letters with true descenders, but, like many dot-matrix printers, the 10X has a telltale trait—its small, squarish letters clearly mark it as a dot-matrix printer.

For less than $50, however, it's possible to greatly improve the print faces. I was at the point of buying another printer when I stumbled upon a module that replaces two chips in the Gemini and, in the process, gives the 10X a different typeface, making it look like a new machine. The NLQ Chip from ESP Corporation is what does the trick.

The surgery needed for this facelift is painless. The only equipment required is a small jeweler's screwdriver for prying up the two integrated circuits and a regular screwdriver to remove the two screws holding the case together. When the top is separated from the bottom, a circuit board is exposed.

The module that provides the near-letter quality comes with a diagram clearly showing which two integrated circuits must be removed. They're side by side, on the top-rear center of the board. After you pull them out, you'll see that the module, which is about the size of a matchbox, has three rows of legs that fit back in where the sockets were located. Aligning them takes about as much eye-hand coordination and dexterity as is needed for most strategy games: Take your time and everything will become clear.

Reassemble the printer and you're finished. The new typeface replaces the Gemini's standard italic set, which you may or may not miss. To invoke the new face, simply enter the printer command formerly used for the italic set. The difference will astound you—it's a new printer! The "y" no longer looks like a "v" with one side too long, serifs have been added to other letters, and the type in general is much clearer.

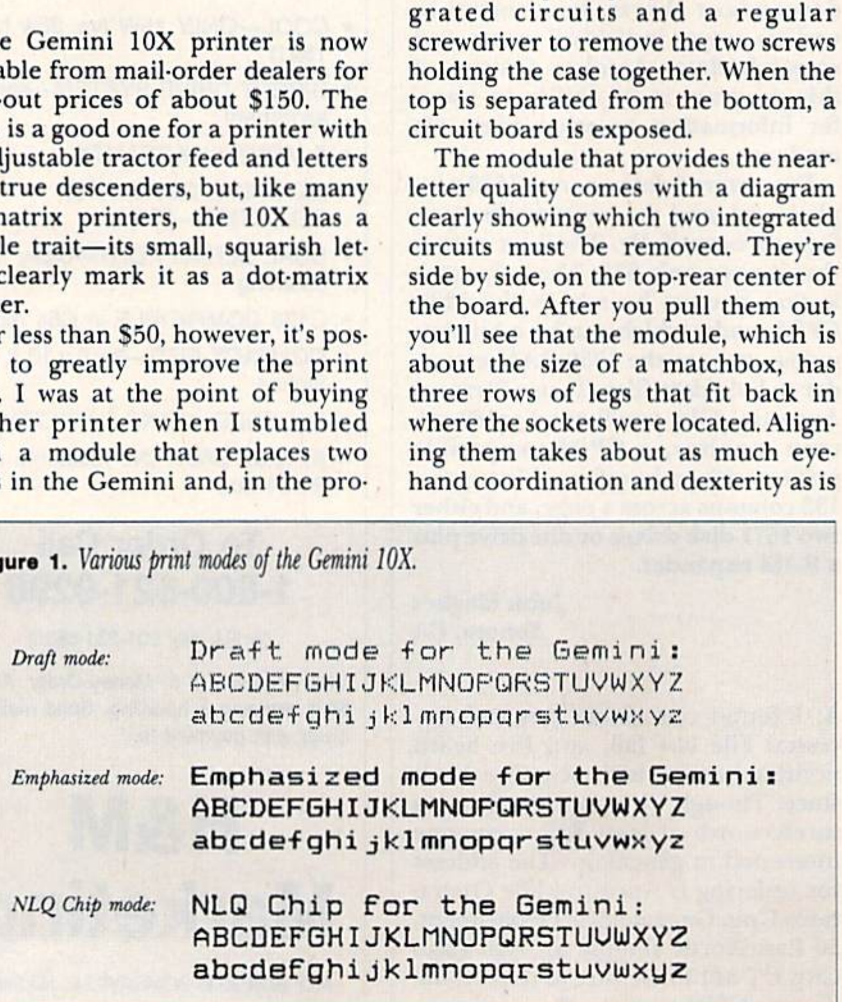
What's the catch? Speed, mainly—the new letters require two passes of the print head. One pass will make the upper portion of the letters and another will add the descenders and fill in any gaps. The extra pass is undetectable in the finished product. A one-page business letter will roll out of the printer in slightly over one minute with NLQ, as compared with the 30 seconds that the Emphasized Type mode would take.

The chip is totally transparent to all graphics programs, including The Print Shop, Blazing Paddles and geoPaint.

There is one small drawback: The open and closing double-quote marks are the same, so an open quote looks odd upon close examination. But that's a small price to pay for a big improvement in the overall typeface.

When ordering, be sure to include the serial number from your Gemini 10X, 15X or Delta 10/15 printer—some serial numbers take different chips. And, think of it this way—where else can you get a "new"

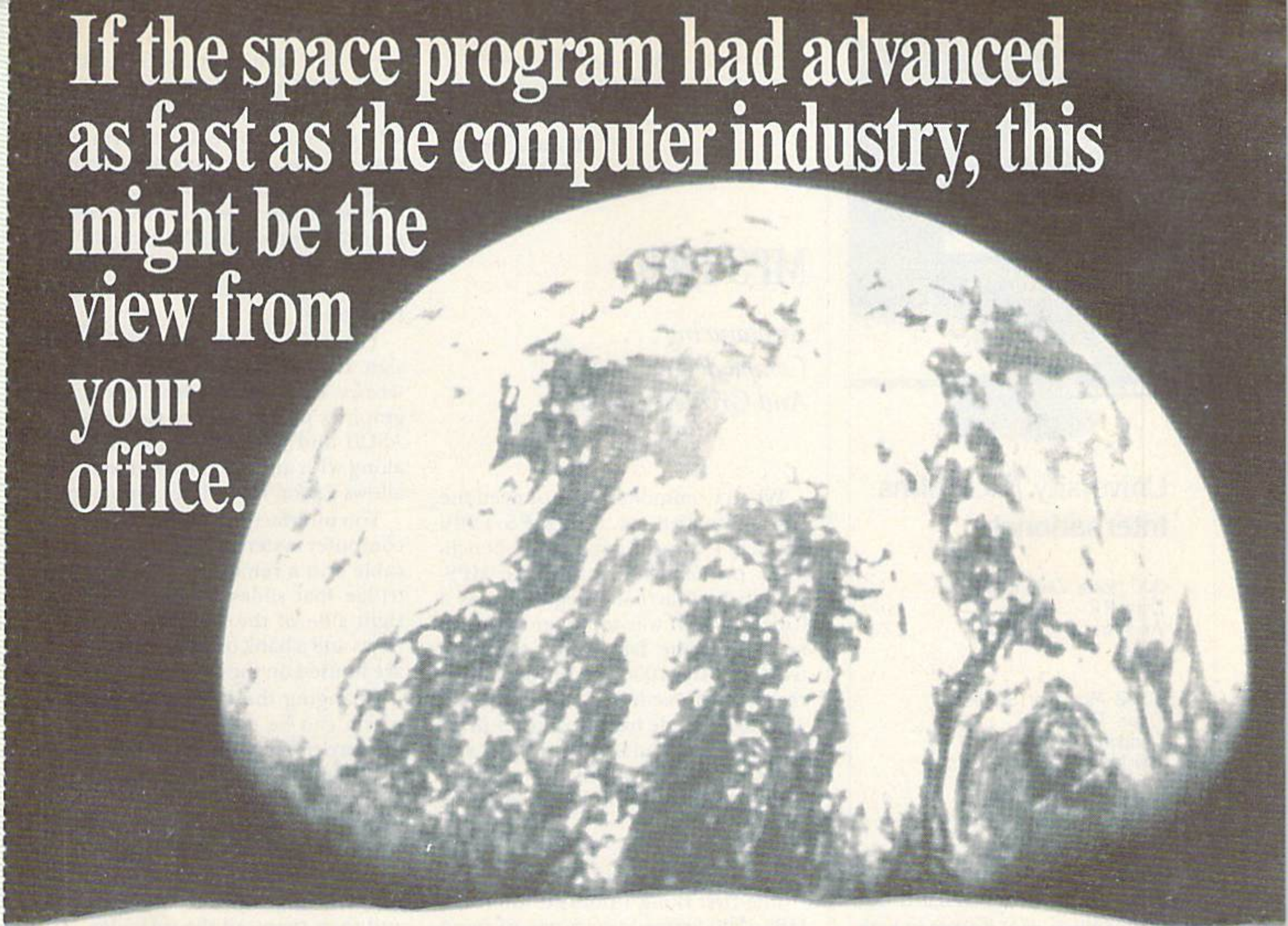
Figure 1. *Various print modes of the Gemini 10X.*



Draft mode: Draft mode for the Gemini:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Emphasized mode: Emphasized mode for the Gemini:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

NLQ Chip mode: NLQ Chip for the Gemini:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz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MPS-1200

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When Commodore announced the introduction of the MPS-1200 printer, I was anticipating a benchmark printer. After all, if the MPS-1200 (which actually began life as a Citizen 120D) was to be an improvement over the fast, quiet, software-friendly MPS-1000, there was ample reason to be excited. The changes that were to be made included faster print speeds of 120 and 24 cps in Draft and NLQ modes, respectively, a larger print buffer and a multitude of print options.

First Impressions

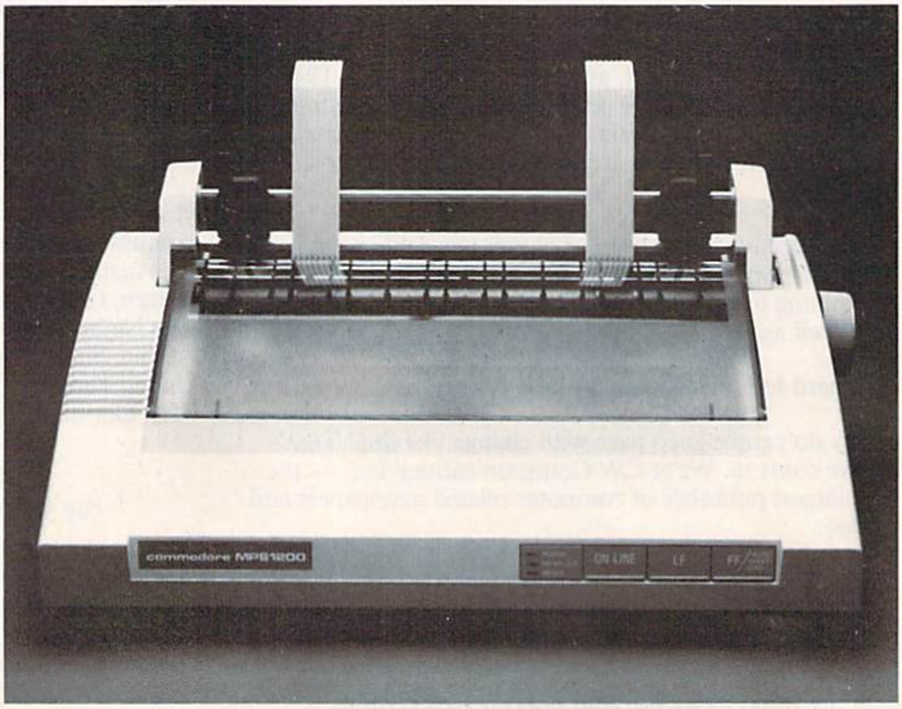
The first thing I noticed when the MPS-1200 arrived was a trio of front panel buttons. These are used to control the On-/Off-Line modes and the paper line and form feed. A glance through the owner's manual revealed the usual hex dump feature, printer self-test and single-sheet form feed that can also be controlled by these buttons. In addition, the MPS-1200 comes with an inked ribbon cartridge reminiscent of the MPS-803's cartridge, a removable tractor-feed unit and a single-sheet removable paper-feed guide.

The print head is of a nine-pin design. It can print bi-directionally and works well with dot-addressable graphics printing. Both Commodore ASCII and true ASCII are available, along with an Epson Code mode that allows Epson FX printer emulation.

You interface the MPS-1200 to your computer system with a six-pin serial cable and a removable interface cartridge that slides in and out of the right side of the printer. Two serial ports and a bank of eight DIP switches are housed on the interface cartridge.

Changing the DIP switch settings, which can be used to activate Commodore or true ASCII modes and the NLQ mode, is a little awkward. The process is rather involved because you must either open the printer's plastic cover and reach inside with a pen, or remove the interface cartridge, change the DIP switch settings and then re-install the cartridge.

This arrangement is more troublesome than it has to be. There are



Commodore's MPS-1200 printer.

printers being produced with easily accessible buttons instead of DIP switches, so the MPS-1200's DIP-switched interface cartridge seems outdated in design.

Print Options

Exhaustive is a word that well describes the list of print options offered by the MPS-1200. I quickly discovered that the Epson Print mode operates independently of any other mode; as a result, the DIP switch that toggles between Commodore and true ASCII can be in either mode when accessing Epson mode. Epson mode changes the print in much the same way that accessing the ASCII mode changes the format of some Commodore ASCII commands.

The Epson mode is beneficial when using software that has Epson printer drivers. Leaving the Print mode in Commodore ASCII and activating the Epson mode didn't reveal any incompatibility problems. On the other hand, leaving the printer in Commodore ASCII mode allows it to emulate a Commodore 1525/MPS-803 printer and create seven-pin graphics. Eight- and nine-pin graphics printing are also available.

The MPS-1200 includes two print pitches—pica (10 cpi) and elite (12 cpi). Double width, compressed and combined compressed/double width are available with both pitches. This results in eight print sizes, ranging from 40 characters per line (pica expanded) up to 160 characters per line (elite compressed). All of these offer true descenders and are clear and readable.

There is a list of all the print options and their respective codes and command syntax at the end of the owner's manual. Since there are so many options, a useful addition to the manual would be a table showing which options can be successfully combined. Also, the print options are displayed with their hex values, so if you need to enter them in their decimal values, you'll have to make the necessary conversions.

Like the majority of dot matrix printers being marketed these days, the MPS-1200 offers near-letter quality (NLQ) characters in a 19 × 19 dot matrix. Despite this dense matrix, these characters are inferior to those created by the MPS-1000 and some other dot matrix machines possessing the NLQ print option. However, the excellent quality of the pica and elite characters in their various configurations seems ample compensation.

A partial list of some of the MPS-1200's other print options includes an italic character set, superscripts, subscripts, double strike, emphasized and vertical enlargement. A wide variety of programmable horizontal and vertical tab commands are also available. Dot graphics are offered in eight densities, ranging from 480 to 1920 dots per line and including single, double, high-speed double and quadruple density, plus four others that Commodore calls CRT Screen, one-to-one, hi-res CRT and two-to-one. Programmable line spacing permits settings starting at $\frac{1}{6}$th of an inch and working in increments all the way down to $\frac{1}{216}$th of an inch.

Complaint Department

My complaints regarding the MPS-1200 are few. Aside from the mediocre NLQ characters, there is a small problem that will catch the unwary by surprise. This occurs when the MPS-1200 is placed into configurations far removed from MPS-803/1525 emulation. It is critical that you know which mode the printer is in before attempting to perform anything but the simplest of printouts. During my first few weeks of testing, I would inadvertently leave the printer in a mode that prevented it from properly performing things like dot-addressable graphics printing. Until I discovered the source of the problem, I mistakenly assumed that the printer lacked the emulation it was supposed to possess.

Summary

When I think of the Commodore dot matrix printers of yesterday, such as the 1526/MPS-802, I realize what extensive improvements Commodore has made in its line of printers. I initially had mixed feelings about the MPS-1200 because of the idiosyncracies of its many print options. However, once I became accustomed to using the printer, I realized its full potential and came to like it very much. I feel that the MPS-1200 will do a lot to inspire confidence in the future of Commodore printers. *(Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380. $299.95.)*

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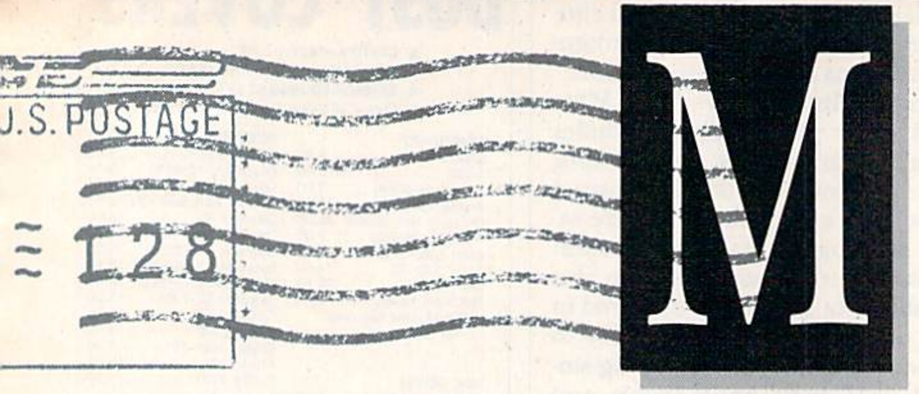


Sixth Sense Update

I'd like to update *RUN* readers regarding the Sixth Sense review published in the January 1987 Software Gallery. That product is now being distributed by our company, Prism Software, 401 Lake Air Drive, Suite D, Waco, TX 76710. The new price is $49.95.

James Domengeaux
Prism Software
Waco, TX

An Excellent Resource

I'm enclosing two disks for the Resource Center programs that have been offered in recent issues of *RUN*. I think it's fantastic that you're willing to take the time and make the effort to copy these programs for readers. This opportunity to build an educational software library is exciting to those of us working with children of various age levels and learning abilities. New programs always seem to rekindle our students' interest in the computer. This service, plus the quality and depth of your articles about computers in the learning environment, makes your magazine column most aptly titled—"The Resource Center."

Robert B. Lindsay
Dallas, TX

CalcAid Improvement

I've typed in and am using the CalcAid 64 program from the November 1986 issue of *RUN*. My congratulations on a fine piece of software and my thanks for sharing it with the rest of us. The fact that it runs in Basic makes it a little slow, but I'm not complaining, because the price is right!

I have found one small problem with the program. Each time I work on my budget for the current month, I have to save it under a new filename. This is rather cumbersome, and it eats up a lot of disk space. To improve the situation, I've modified line 25110 to read as follows:

```
25110 OPEN2,8,2,“@0:”+IN$+“,S,W”:
      GOSUB24500
```

Now I can save my work with the same filename as many times as I want. The updated file replaces the old file with the same name because of the @0: in the code.

Paul F. Jackson
Alto, MI

Thanks for your modification, Paul. Readers who make this change to CalcAid 64 should be sure to have enough space on disk to hold a large file.

Editors

Olivetti Printer File

I'm writing in regard to Michael Jones' letter in last December's Mail RUN, expressing the wish for more software to support the Olivetti PR-2300 printer. I, too, own a PR-2300 and am frustrated by the lack of compatible software.

My greatest frustration has been the inability to use the many special features of this printer with PaperClip. Now, however, after many hours of work and with the assistance of Batteries Included, I've written a printer file that enables me to do two kinds of underlining, as well as double-width and double-height printing.

Although I have a C-64, the printer file should work with the C-128 also. Anyone who wants it can send me a formatted disk, and I'll copy the file onto it for them.

Ira Stoller
3028 Nostrand Ave.
Brooklyn, NY 11229

Superbase Review

I'd like to comment on the review of Superbase 128 in the "Big Software for Small Business" article in the October 1986 issue of *RUN*. Your reviewer mentioned the problems some users have had accessing records on some 1571 disk drives with version 2 ROMs. I experienced problems with my 1571 reporting an "I/O ERROR #5" (Device Not Present) under various circumstances (not the same problem your article described). I contacted Progressive Peripherals and received the same advice that you reported: Change the ROM in the drive. But since I also experienced the same problem at times with my MSD drive and a 1541, I was a little skeptical about that solution.

I have version 2.0 of Superbase 128 and found that a friend has version 2.03. We tried his version on my equipment under the same circumstances and with the same disks that had been telling me that the drive was not there. Lo and behold, the problem did not occur with the later version.

Your reviewer also mentioned the

capability of having both Superbase and Superscript in memory at the same time, but passed over what is, for me, one of the most impressive and useful features of this arrangement: the ability of Superbase programs to pass command strings to Superscript. This feature lets you merge data from databases into letters, using the row and column math features of the word processor to perform mini-spreadsheet manipulations of data from the database.

All in all, the review was good and accurate, although a bit short to really give a full picture of the power these two programs bring to the C-128.

Larry Penland
Redding, CA

Appreciative Winner

I just wanted to drop you a note to thank you all for the goodies I won in your RUNaway contest.

Although I own a C-64 and do very little programming, nothing went unappreciated.

The C-128 material was greatly appreciated by a good friend who owns a 128. I shared the programming books and tutorials with two very good friends who love to program. The VIC-20 programs were a great gift for my brother, who has a VIC-20.

And the C-64 stuff? Well, I will continue to enjoy my gifts for years to come. Thanks a million.

Catherine T. Lingenfelser
Savannah, GA

Device One Interface Review

The review of our Device One printer interface by technical editor Tim Walsh in last December's issue of *RUN* made us take a long, hard look at the manual, and we are now rewriting it. The new manual, which is scheduled for release by December 15, 1986, will include many more examples, and the descriptions will be more concise, clear and comprehensive. Any Device One user who wants to trade his old manual for the new version can send in the old one and we'll gladly exchange it.

Mr. Walsh's concluding statement, that Device One "contains many features that I did not have space to mention" is quite true. I'd like to mention that Device One has three sizes of software-selectable, custom fonts, and that up to 17 different fonts can be used in one sentence. Four fonts are included in ROM.

Also, a banner utility lets you print full-size banners (8 inches high) and supports all three font sizes, Expanded mode, Underline mode and Reverse Field mode simultaneously. A letterhead utility and automatic page numbering are offered, and the ASCII mode converts PET ASCII files to standard ASCII format.

In addition, I'd like to clarify that the Device One "utility" that prints calendars is ROM-based. It's not a software utility.

In answer to the question regarding software compatibility, we don't know of any program that Device One won't work with. We didn't include a list of software the interface supports in the manual, since the list would be too long.

The new manual should make operating this interface much easier. We thank Mr. Walsh for making it clear that the manual needed reworking. I'm sure many future Device One users will appreciate the results of his comments.

Susan Dorn
Progressive Peripherals & Software
Denver, CO

Our thanks to Progressive Peripherals for pointing out these items of interest.

We'd like to mention that the Device One unit we reviewed had a tendency to become hotter after about four hours of operation. We determined that the unit's power supply was the source of this overheating.

Also, after about six weeks of use (and several weeks after the review was completed), the interface started making every 1571 disk drive we tested it with lock into 1541 mode. When we called Scott Maxwell, the designer of the unit at Progressive Peripherals, his response was, "Enter the command OPEN 15,8,15:U0>M1:CLOSE 15." This command didn't help, however.

Editors

Canadian Market

I have a complaint on behalf of *RUN*'s Canadian readers, who are being left out in our well-known cold. You often publish articles that mention services such as bulletin boards. However, only U.S. phone numbers are given. If a Canadian user who is new to telecomputing calls to see what one of these boards has to offer, it naturally takes him or her some time to get the knack of using the board. I'd be most willing to trade phone bills with almost anyone after one of these exercises.

There's a vast, untapped market in Canada for the large bulletin boards and other goods and services, but there's a need for these to have either local Canadian numbers or Canadian 800 numbers, or calling becomes discouragingly expensive.

Please try not to forget us up here in the snow.

Bryan R. Kilmer
St. Thomas, Ontario, Canada

Tracking Down a Trackball

I waited almost too long. Ever since I bought my C-64, I'd thought of buying a trackball, but I never got around to it. A joystick always seemed to do just as well. However, recently, with the advent of Electronic Arts' Marble Madness, I decided the time had come.

You guessed it! No one stocks trackballs anymore. I looked all over my area and beyond, and I called every distributor and software house listed in *RUN*. Finally, in desperation, I phoned *RUN*. They gave me numbers for two possible trackball sources, Wico and Tussey Computer Products. Those firms couldn't help, but then it occurred to me Atari might have a trackball I could use. In another call, *RUN* came up with a number for Atari. What do you know, they still sell trackballs!

I'd like to thank *RUN* for its help and pass along the information for getting a trackball from Atari. Their 64-compatible trackball is the 2600 Pro-Line, and it costs $19.95 plus $2.50 shipping and handling. Send that amount to Atari Customer Relations, PO Box 61657, Sunnyvale, CA 94088. Their phone number, if you have questions, is 408-754-2000.

Gerard F. Walter
Ozone Park, NY

A Call to Readers

This page is your stage, so stand up and say a few words. Extend praise, air grievances or offer hands-on advice and information.

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. Each letter must include the writer's name and complete address. RUN *reserves the right to edit letters for style, clarity and space.* ■

NEW PRODUCTS RUNDOWN

Compiled by HAROLD R. BJORNSEN

Diablo

Classic Image (510 Rhode Island Ave., Cherry Hill, NJ 08002) introduces Diablo, a maze-like and arcade-style game for the C-64. It consists of 240 sections of movable track, two tracks on each of 120 movable panels and a ball. The object of the game is to arrange the convoluted track so as to keep an ever-advancing ball on a continuous course. After the ball has traversed a section of track, the track is removed. The game becomes a challenge as less and less track is available to guide the accelerating ball. The game requires strategic planning and decisive control. Available on disk for $29.95.

Check Reader Service number 400.

IRS Time Again

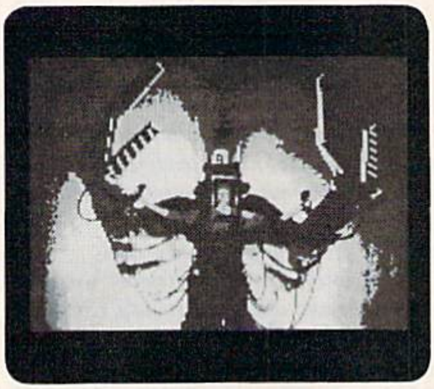
Master Software (6 Hillery Court, Randallstown, MD 21133) has released its 1986 version of Tax Master, an aid in the preparation of U.S. Federal Income Taxes for the C-64. Tax Master guides you through the preparation of Forms 1040 and 4562 and Schedules A–F. It figures your taxes automatically, performs all calculations and even transfers results from one tax form to another. You can also update information for W-2 forms and bank interest statements.

A file-coding system lets you store data for many taxpayers on one disk. More than one Schedule (C, E and F) and Form 4562 can be prepared for any taxpayer in case more than one business or farm exists. Tax Master prints out the data from all forms. Available on disk for $30, with an instruction manual and a coupon good for a discount on the 1987 version when it becomes available.

Check Reader Service number 402.

"Get Them *Out* of There!"

Aliens: The Computer Game is based, of course, on the movie *Aliens*, one of last summer's big hits. As the heroine, you must do everything to save your life and the lives of your crew—from navigating the drop-ship and fending off waves of aliens to rescuing Newt and combating the Alien Queen. Aliens: The Computer Game is available on disk for the C-64 for $34.95 from Activision, Inc., 2350 Bayshore Parkway, Mountain View, CA 94043.



Aliens: The Computer Game, from Activision.

Check Reader Service number 401.

Fight or Flight

Spinnaker (One Kendall Square, Cambridge, MA 02139) has added two new games for the C-64 to its line of arcade-action software.

In Z-Pilot, you are at the controls of a futuristic, high-performance jet fighter that's equipped with state-of-the-art guidance systems.

In Strike Force: Cobra, your mission is to infiltrate a seemingly impenetrable enemy fortress; counter its complex defenses; and locate, attack and destroy the main computer complex. Each game is available on disk for $9.95.

Check Reader Service number 409.

Take Me Out to the Ballgame

SubLogic (713 Edgebrook Drive, Champaign, IL 61820) has released Stadium Disk for use with its Pure-Stat Baseball team-management package. Now you can play in any of 26 Major League stadiums. The package also includes an additional ten classic teams from the past. You can manage any of these teams or trade players from them when creating your own teams. Also included is information to improve your game, such as which stadiums favor hitters or pitchers and which result in typically low-scoring games due to wind and weather. The Stadium Disk is available for the C-64 for $19.95.

Check Reader Service number 406.

For Children and The Visually Impaired

Kidsview is a software package that doubles the size of screen characters to make them easily visible to young children and the visually impaired. It

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operates in real time and doesn't change the basic operation of your computer. Kidsview is available on disk for the C-64 for $29.95. Kidsview Software, PO Box 98, Warner, NH 03278.

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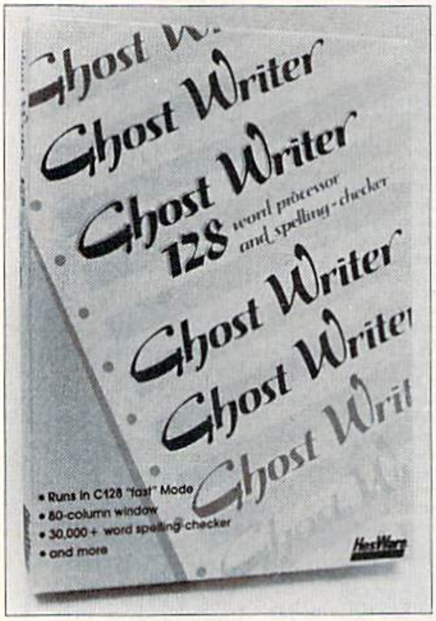
Who You Gonna Call?

GhostWriter 128, that's who. It's a word processor for the C-128 (in 40- and 80-column modes) that formats text to the screen automatically and lets you change margins, tabs, indents, numerical tabs and line spacing. Features include an expandable, 30,000-word spelling checker; move, copy, delete and insert functions; find and find/replace; file merging from other word processors; an address label option; and left- and right-margin justification. GhostWriter 128 is compatible with most letter-quality and dot-matrix printers (except RS-232C-interfaced printers) and comes with a 70-page manual. Available on disk for $39.95 from HesWare, 390 Swift Ave. #14, South San Francisco, CA 94080.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HesWare's GhostWriter 128 has a 30,000-word spelling checker.

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Fish School

Fish-Ed, a new educational program from Buchanan Software (160A North Fairview Ave., Suite 146, Goleta, CA 93117), features four learning games designed for students in kindergarten through sixth grade.

In Alphabet Practice, your child must place letters in alphabetical order. In Spelling, he or she can practice spelling with word lists from Fish-Ed's library, or you can create your own 20-word spelling lists.

Number Concepts teaches your child the quantitative meaning behind addition and subtraction. Math Practice gives your child practice in addition, subtraction, multiplication, division, fractions, decimals, negative numbers and chain problems from Fish-Ed's library. You can also create and save your own problem lists. Available on disk for the C-64 for $29.95.

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Rise Through the Ranks

Gunship—The Attack Helicopter Simulation is now available for the C-64. Gunship not only simulates the skill and action of high-speed, low-level helicopter flight; it also simulates your career development as a helicopter pilot by tracking your record from early training through rank promotions and world missions and on to the possible award of a Congressional Medal of Honor.

Flying maneuvers are presented in 3-D graphics, and hi-tech information and weapons systems include lasers, video cameras, night viewers, radar warnings, jammers, on-board computers, missiles, rockets, flares and a 30mm cannon. An 84-page operations manual and a keyboard overlay are a standard part of the package. Available on disk for $34.95. MicroProse Software, 120 Lakefront Drive, Hunt Valley, MD 21030.

Check Reader Service number 413.

Notebooks, Quizzes and Swimming Pools

Three new programs for the C-128 have been released on disks for $19.95 each by Free Spirit Software (538 S. Edgewood, LaGrange, IL 60525). Programmer's Notebook is a high-speed data storage and retrieval system that stores up to 720 pages of computer information with the 1571 disk drive (500 pages with the 1541).

Mr. Quizzer helps teachers prepare quizzes on any subject (even trivia games) and includes options for multiple choice, vocabulary and general question/answer formats.

Swimming Pool Chemistry Database calculates the required chemical doses of assorted pool chemicals and automatically maintains test and treatment records.

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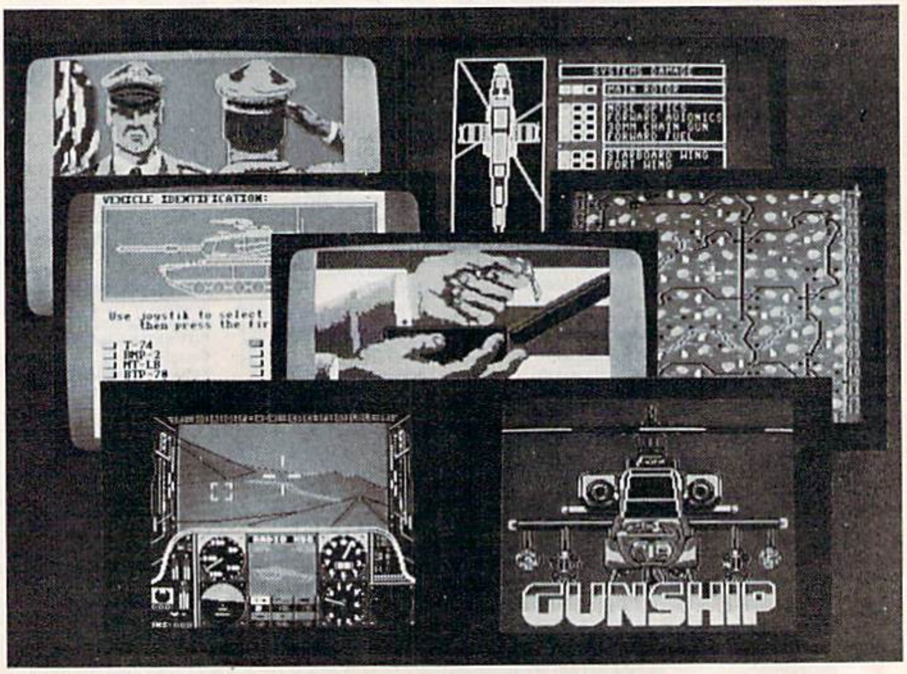
ROMdisk

Epimetheus Corporation (PO Box 728108, Berkley, MI 48072) intro-



MicroProse's Gunship—The Attack Helicopter Simulation.

duces its 128K ROMdisk with Hyperboot for the C-64. Attached to the user port, you can create a library of up to 150 of your favorite programs. Hyperboot, an 8K cartridge, transfers program files from the 1541 disk drive to the ROMdisk, which then can load your programs at a rate of 63 disk blocks per second. The ROMdisk is erasable with ultraviolet light and can be reprogrammed thousands of times. The ROMdisk cartridge, along with Hyperboot, retails for $179.

Also available are two-way switches that allow both a modem and the ROMdisk to use the user port without manually switching the modem and ROMdisk ($39) and a three-foot ribbon wire extension cable to allow remote placement of the ROMdisk or modem ($24.95).

Check Reader Service number 408.

Memory Cartridge

Scinort Micro (PO Box 17546, Austin, TX 78760) has a nonvolatile memory cartridge for the C-64 that eliminates manual loading of often-used utilities, function key settings and screen configurations on power-up. The loader program can set your Basic or machine language program to autoload or autoload and run on power-up or by a SYS jump to the cartridge. Batteries (included with the cartridge) preserve your data for more than a year, and a write-protect switch guards against accidental write access. The Scinort Micro memory cartridge costs $24.95.

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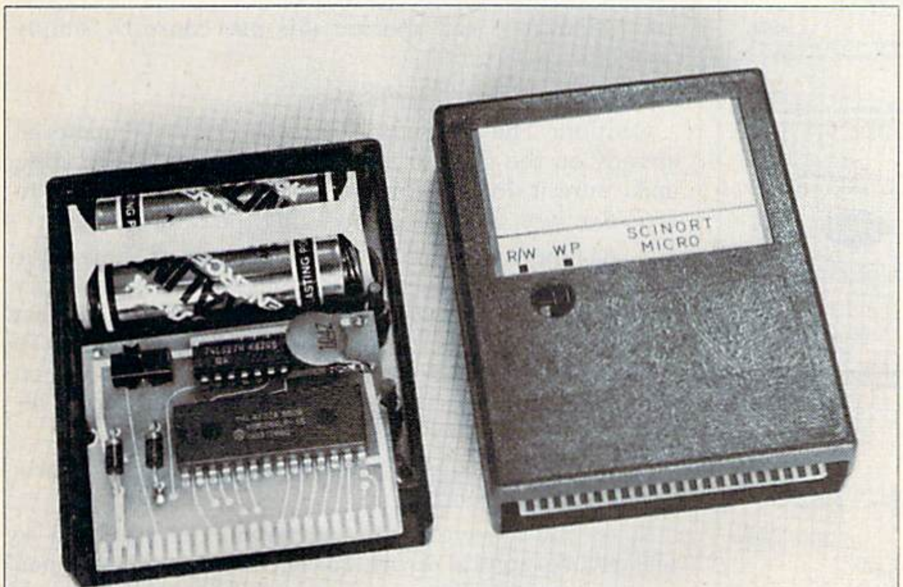

The Memory Cartridge, from Scinort Micro.

Basic Training

C-128 Basic Training Guide, a 295-page volume from Abacus Software (PO Box 7219, Grand Rapids, MI 49510), is for programmers who want to learn the C-128's Basic programming language. Topics covered are Programming in Basic, Extended Program Structures, Advanced Basic Applications, Principles of File Management, Music and Graphics, and Utilities. It sells for $16.95.

Check Reader Service number 412.

Teacher's Pet

Five learning programs for the C-64 have been released by Sunburst Communications (39 Washington Ave., Room FM, Pleasantville, NY 10570). Each package includes a teacher's guide, one data disk and a backup disk, and it retails for $59. Teachers might wish to get the ten-disk lab pack, with a teacher's guide for each package, for $177.

Memory Building Blocks (kindergarten to adult) lets students build visual and auditory memory skills by playing five concentration-type games.

In Iggy's Gnees (grades 1–4), students can develop their visual discrimination skills by solving problems at three levels of difficulty.

Code Quest (grade 4 to adult) sharpens students' thinking skills, including discrimination, classification and rule formation, by decoding clues and forming hypotheses on the identity of a "mystery" object.

Gears (grade 6 to adult) lets students experiment with gears while learning the problem-solving skills of prediction and analysis.

In Discover (grades 6–12), students observe alien life forms in order to provide them with the right foods at the right times and to set up barriers and pathways to promote or inhibit interaction among the creatures.

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Image 3

Micro Development (PO Box 5872, Cleveland, OH 44101) introduces Image 3, a graphics program that lets you create three-dimensional images with your C-64. Image 3 can draw monoscopic and stereoscopic images that, when viewed with special 3-D glasses, appear to have depth and "float" behind the monitor screen. A "key" language converts simple up-down/right-left/tilt commands into 3-D vectors and coordinates.

Some features of Image 3 are changes in perspective, an auto-setup file, operator gauges to indicate image attitude and a proportional screen dump that prints out a hard copy of the image in three shades to highlight the height, width and depth. Available on disk for $59.95.

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The Accountant

KFS Software (1301 Seminole Blvd., #153A, Largo, FL 33540) has released The Accountant, a bookkeeping package for the C-128 and 1571 disk drive. Features include financial statements, a general journal (standard debit/credit format), customer statements (generates letterheads or use your own), payroll recordkeeping (weekly, monthly, quarterly and annually, and a checkwriting option) and preset file sizes to accommodate small business. The Accountant is available for $149.95.

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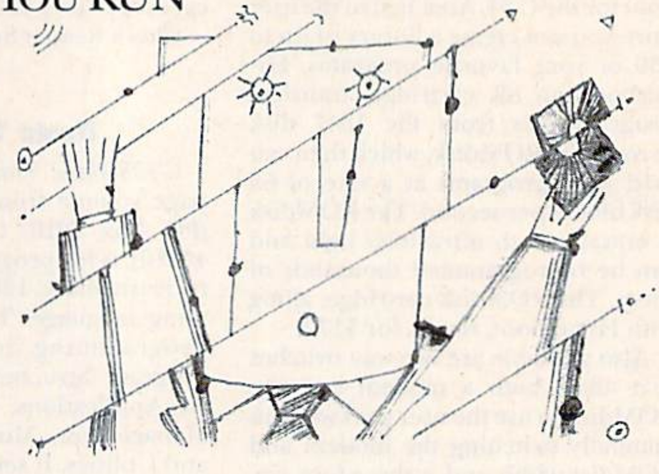
LEARN TO WALK BEFORE YOU RUN



We receive many letters from new Commodore owners who want to learn the first steps in using their computers. For these first-time users, we present the following step-by-step list of things that all beginners should be aware of as they start typing in programs.

1. Before you can use a fresh disk, you have to format it. First turn on your disk drive, then insert the disk, close the latch and type:

```
OPEN15,8,15 <Press Return>
PRINT#15,"N0:NAME,##" <Press Return>
```

The ## is a two-character identification number that can be any combination of letters and/or digits. "NAME" can be any title for your disk that you choose, but it must not exceed 16 characters. Wait for a few minutes while the disk spins inside the drive, being formatted. When the disk stops spinning, type:

```
CLOSE15 <Press Return>
```

C-128 owners can shorten this procedure by simply typing:

```
HEADER "NAME,##" <Press Return>
```

Caution: The formatting process erases all material already on the disk, so if you're formatting a used disk, make sure it doesn't contain any programs you want to save. See item 7, below, on reading the disk directory.

2. As a beginner, you should start entering short Basic programs. Avoid machine language listings and very lengthy Basic programs until you get the hang of what you're doing. We have a checksum program (Perfect Typist) which actually proofreads your typing and tells you when you make a mistake. You should type in Perfect Typist before you enter any programs. See directions below.

3. Remember to press the return key after each programming line you type in.

4. As you are typing in a program, you are likely to make typographical errors. To check what you have typed in, you'll need to list your program's lines on the screen. You can specify the exact lines that you want to see. Typing LIST 10–50 will list lines 10 through 50. LIST 20 will list only line 20. If you see an error in one of your

listed lines, you can fix it by using the INST/DEL key and retyping the incorrect section of the line. Always press the return key after you have fixed a line.

5. Be sure to save what you have typed in before turning off your computer. To save any partial or complete Basic program listing to your disk, type:

```
SAVE "NAME",8 <Press Return>
```

C-128 owners can press F5, type in the program name, and press the return key.

Note: As you save subsequent versions of the same program, you need to make a slight change in the program name each time. You might simply add version numbers to the end of the program name (PROGRAM.1, PROGRAM.2, etc.).

6. While working on a program, you may develop several versions before you're satisfied that you have it in final form. After you *do* achieve that final version, you might want to go back and erase the old, incomplete versions from your disk. Erasing unwanted programs is called scratching. (Be sure not to erase your final version!) To scratch a program, type:

```
OPEN15,8,15 <Press Return>
PRINT#15,"S0:prog.name" <Press Return and wait a few seconds>
CLOSE15 <Press Return>
```

7. After you have saved several programs to your disk, you will need to see their names so that you can load the one you want. To get the complete list (the disk directory) of all the program names on your disk, type:

```
LOAD "$",8 <Press Return>
```

Then type LIST to actually see the directory. C-128 owners simply press F3.

8. When you know what program you want to load into your computer, type:

```
LOAD "NAME",8 <Press Return>
```

C-128 owners can just press F2, type in the program name, and press the return key.

9. After you have loaded a program, type RUN to actually use the program.

HOW TO TYPE LISTINGS FROM *RUN*

To simplify your typing of *RUN*'s C-64 and C-128 program listings, we include checksum numbers. These numbers follow a REM statement at the end of each line (e.g., :REM*123). These checksum numbers necessitate your using *RUN*'s Perfect Typist programs, listed below. Use 64 Perfect Typist for C-64 programs and 128 Perfect Typist for 128 Mode programs on the C-128.

Type in 64 Perfect Typist (Listing 1) or 128 Perfect Typist (Listing 2) and save it to either tape or disk before running. When you want to type in a 64- or a 128-mode program, first load and run the appropriate Perfect Typist listing. Two SYS numbers will be displayed on your screen. Jot these down and keep them handy. They are

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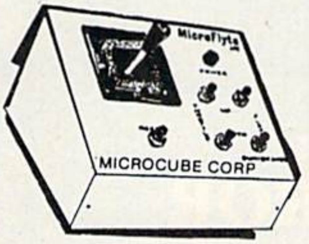

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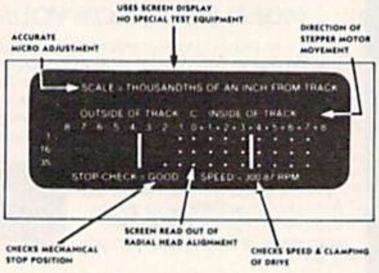
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the SYS numbers that you type in for deactivating and reactivating the checksum program.

After Perfect Typist has been loaded and run, start typing in the program listing from *RUN* as you normally do. The only difference is that now, after you press the return key to log in each line, a 1-, 2- or 3-digit number will appear below the line on the left margin. This is the checksum number, ranging from 0 to 255.

If this number matches the checksum number printed in the listing after the :REM*, then you know you have typed that line correctly. Then you type the next program line right over the previous line's checksum value. If the checksum numbers do not agree, analyze your line on screen for any typographic errors or omissions. Make the needed changes and press the return key again to log in those changes. A new checksum number will appear in place of the old one. Compare this to the magazine's number and then proceed to the next line.

When you've finished typing in your program, disable the Perfect Typist by typing in the appropriate SYS number for either 64 or 128 mode, and press the return key. Now you can save your program as usual, to disk or tape. (Before you attempt to run your new program, turn your computer off and back on to completely clear out the Perfect Typist program.)

You may save an incomplete program any time and continue it later. You will have to reload and run the Perfect Typist program, then load the incompleted program that you were working on, list it, and continue where you left off.

The 128 Perfect Typist will work in either 40 or 80 columns. Also, it lets you use the C-128's automatic line-numbering. If Auto is on, the checksum will be printed below the line you just entered, and the C-128 will place the next line number below the checksum.

All listings in *RUN* have been translated so that the graphics and control characters are designated as understandable key combinations. When you see instructions inside curly brackets, such as {SHIFT L}, you should hold down the shift key and press the L key. What you see on your screen will look quite different from what is designated inside the brackets. Another example is {22 SPACEs}, which instructs you to press the space bar 22 times.

Listing 1. *64 Perfect Typist program.*

```
1 REM 64 PERFECT TYPIST
2 REM BY: JAMES E BORDEN
10 POKE56,PEEK(56)-1:POKE52,PEEK(56):CLR
20 PG=PEEK(56):ML=PG*256+60
30 FORX=ML TO ML+154:READD:T=T+D:POKEX,D:NE
   XT
40 IFT<>16251 THEN PRINT"ERROR IN DATA...":
   END
60 POKEML+4,PG:POKE ML+10,PG:POKE ML+16,PG
70 POKE ML+20,PG:POKE ML+32,PG:POKE ML+38,P
   G
80 POKE ML+141,PG
89 PRINT"{SHFT CLR}{CRSR RT}***************
   ***********************"
90 SYS ML:PRINT "{CRSR RT}** 64 PERFECT TYP
   IST IS NOW ACTIVE{2 SPACEs}**"
```

Listing 1 continued.

```
100 PRINT "{CRSR RT}** SYS"ML"=ON{5 SPACEs}
    SYS"ML+30"=OFF **"
101 PRINT"{CRSR RT}************************
    ***************":NEW
110 DATA 173,005,003,201,003,208,001,096
120 DATA 141,105,003,173,004,003,141,104
130 DATA 003,162,103,160,003,142,004,003
140 DATA 140,005,003,096,234,234,173,104
150 DATA 003,141,004,003,173,105,003,141
160 DATA 005,003,096,032,124,165,132,011
170 DATA 162,000,142,240,003,142,241,003
180 DATA 189,000,002,240,051,201,032,208
190 DATA 004,164,212,240,040,201,034,208
200 DATA 008,072,165,212,073,001,133,212
210 DATA 104,072,238,241,003,173,241,003
220 DATA 041,007,168,104,024,072,024,104
230 DATA 016,001,056,042,136,016,246,109
240 DATA 240,003,141,240,003,232,208,200
250 DATA 173,240,003,024,101,020,024,101
260 DATA 021,141,240,003,169,042,032,210
270 DATA 255,169,000,174,240,003,032,205
280 DATA 189,162,003,189,211,003,032,210
290 DATA 255,202,016,247,164,011,096,145
300 DATA 013,032,032
```

Listing 2. *128 Perfect Typist program.*

```
1 REM 40/80 COL C128 PERFECT TYPIST
2 REM BY: JAMES E BORDEN
10 FORX=5120TO5379:READD:T=T+D:POKEX,D
20 NEXT:IFT<>28312 THENPRINT"{2 CRSR DNs}ER
   ROR IN DATA...":END
25 A$="":IFPEEK(215) THENA$="{20 SPACEs}"
30 PRINT"{SHFT CLR}"A$" ********************
   ********************"
40 PRINTA$" ** 128 PERFECT TYPIST IS NOW AC
   TIVE **"
50 PRINTA$" **{2 SPACEs}SYS 5120=ON{7 SPACE
   s}SYS 5150=OFF{2 SPACEs}**"
60 PRINTA$" *******************************
   *******":SYS5120:NEW
70 DATA 173,5,3,201,20,208,1,96,141,45,20,1
   73,4,3,141,44,20,162,43,160,20
80 DATA 142,4,3,140,5,3,96,234,234,173,44,2
   0,141,4,3,173,45,20,141,5,3,96
90 DATA 32,13,67,140,255,19,162,0,142,252,1
   9,142,253,19,142,254,19,189,0,2
100 DATA 201,32,240,8,201,48,144,7,201,58,1
    76,3,232,208,238,189,0,2,240,54
110 DATA 201,32,208,5,172,254,19,240,42,201
    ,34,208,10,72,173,254,19,73,1
120 DATA 141,254,19,104,72,238,253,19,173,2
    53,19,41,7,168,104,24,72,24,104
130 DATA 16,1,56,42,136,16,246,109,252,19,1
    41,252,19,232,208,197,173,252
140 DATA 19,24,101,22,24,101,23,141,252,19,
    169,42,32,241,20,32,188,20,160
150 DATA 2,185,185,20,32,241,20,136,16,247,
    165,116,208,9,165,117,208,5,169
160 DATA 145,32,241,20,172,255,19,96,13,32,
    32,162,0,173,252,19,232,56,233
170 DATA 100,176,250,105,100,202,240,3,32,2
    32,20,201,10,176,5,205,252,19
180 DATA 240,15,162,0,232,56,233,10,16,250,
    24,105,10,202,32,232,20,170,72
190 DATA 138,9,48,32,241,20,104,96,170,173,
    0,255,72,169,0,141,0,255,138,32
200 DATA 210,255,104,141,0,255,96
```

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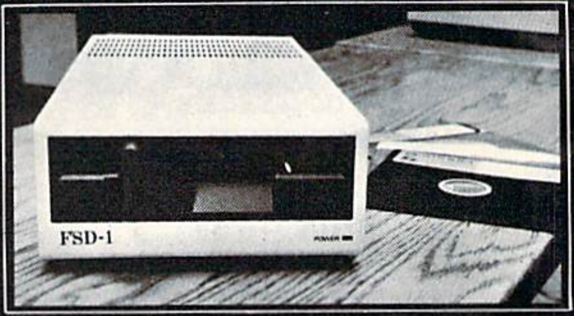

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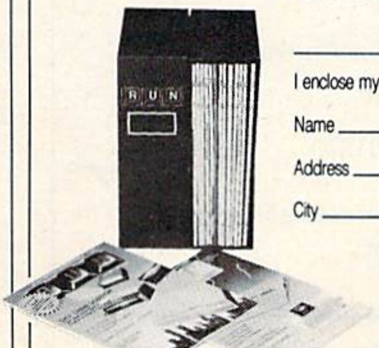

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● **HARD DISK DRIVES**—Are you in the market for additional memory—and lots of it—for your Commodore? The lead article in our April issue will take a look at the growing selection of hard disk drives on the market. If you use your Commodore for applications that involve a lot of data, you won't want to miss this review.

● **TAX PROGRAMS**—We'll also offer a wrap-up of commercially available programs for the C-64 and C-128 to help you prepare your taxes by the April 15 deadline. Once you do your taxes on your Commodore, you'll never want to take the pencil-and-paper route again.

● **DATAFILE SPREADSHEET**—Many readers of *RUN* already know DFCalc through the Productivity Pak series. Everyone else will want to read the introduction to this Datafile-compatible program for producing spreadsheet-like reports.

● **ELECTRONIC EXPRESSIONS UPDATE**—Our introduction to the world of electronic publishing in last December's issue has generated a lot of response from readers interested in creating everything from banners to newsletters. In April, we'll continue our coverage of this technology with a review of more programs for combining text and graphics with your Commodore.

● **MORE SKIRMISHES IN THE SOFTWARE WAR**—Last January's issue, with its lead story on software protection and piracy, has come and gone, but the debate rages on. No other article in *RUN*'s history has generated such reader response. Next month, we'll publish several pages of letters we've received on this controversy.

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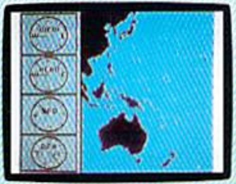

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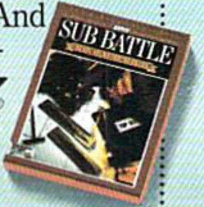

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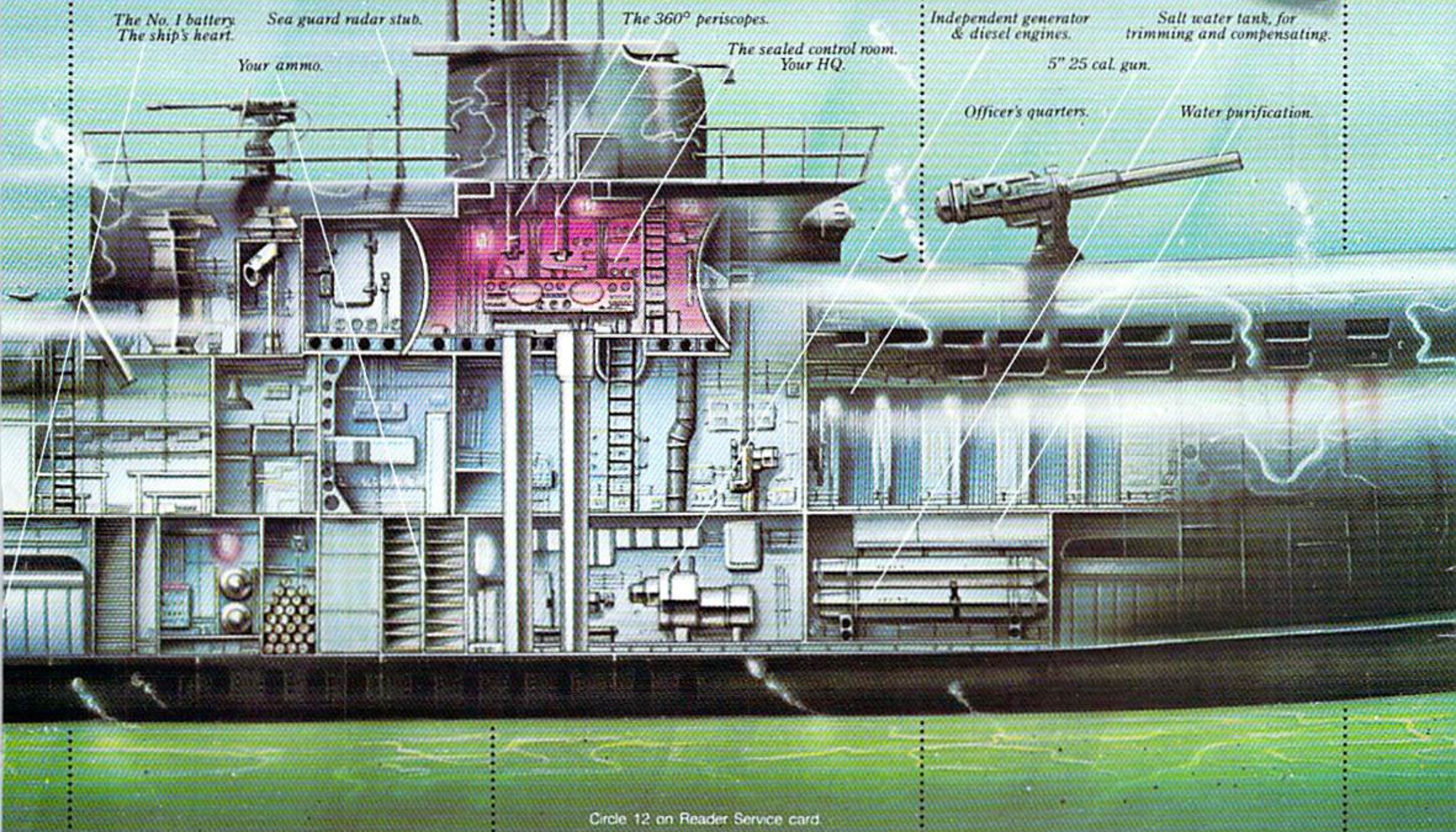
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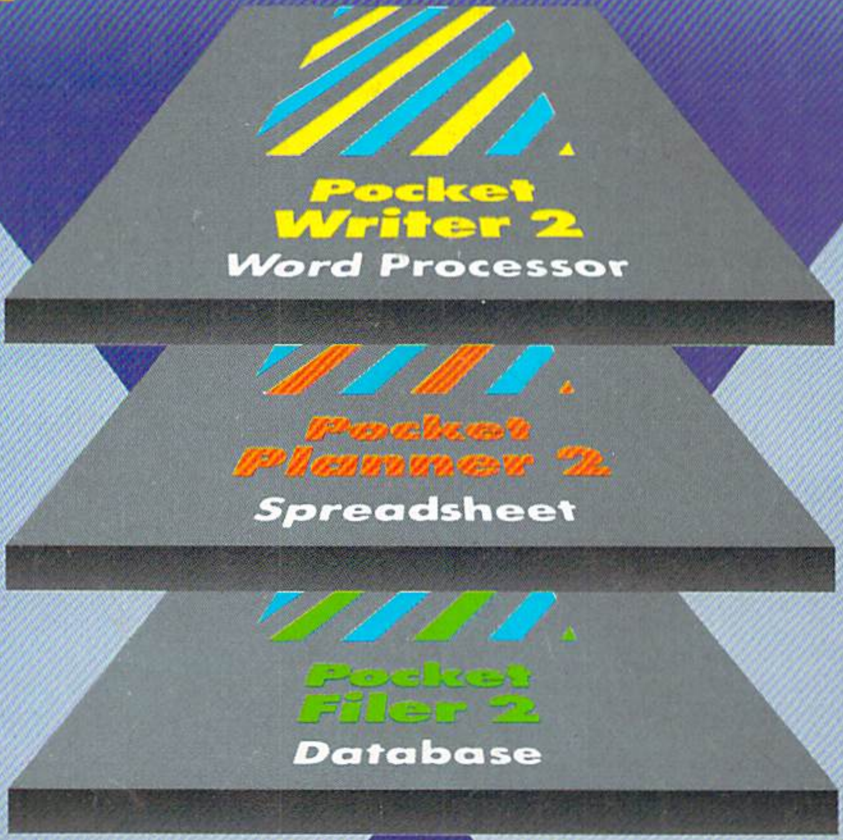

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